VPDES Permit VA0001589
Steel Dynamics, Roanoke Bar Division
Reissuance 2011

ATTACHMENT A

1. Flow Frequency Memo of March 25, 2010
2. Industrial process water flow diagram of from permit application
3. Waste water treatment flow diagram from the permit application
4. Portion of Roanoke USGS quadrangles (109 C)
5. 2008 Impaired Waters Fact Sheets L04R bacteria, PCB and benthic
6. Excerpt for Bacterial TMDL for Roanoke River Watershed, reference to Roanoke Electric Steel without a bacterial allocation for the discharge
7. Excerpt for PCB TMDL for Roanoke River Watershed, reference to Roanoke Electric Steel with allocation for the process wastewater and stormwater discharges
8. Excerpt for Benthic TMDL for Roanoke River Watershed, reference to Roanoke Electric Steel with allocations for the process wastewater and stormwater discharges
9. Site visit report of July 8, 2009 visit to plant
10. STORET monitoring data for station 4APEE01.04 - pH, hardness and temperature

MEMORANDUM
DEPARTMENT OF ENVIRONMENTAL QUALITY - WATER DIVISION

Water Permitting, Blue Ridge Regional Office - Roanoke
3019 Peters Creek Road, Roanoke, VA 24019-2738

SUBJECT: Flow Frequency Determination, Steel Dynamics (dba RES Roanoke Bar Division) - VA0001589

TO: Permit reissuance file

FROM: Susan K. Edwards, Environmental Engineer Senior, Water Permitting - BRRO Roanoke

DATE: March 25, 2010

This memo supercedes the November 2004 memo concerning the subject VPDES permit.

The Steel Dynamic's treated industrial wastewater discharges to Peters Creek just upstream of the extremely large culvert under a large area of railroad tracks and the confluence of Peters Creek with the Roanoke River on the western side of Roanoke, VA. Stream flow frequencies are required at this site for the purpose of calculating effluent limitations for the VPDES permit.

The VDEQ and USGS have operated a continuous record gage on Tinker Creek (#02055100) since 1956. The gage is located 1.3 miles northwest of Daleville, VA. The flows at the discharge point were calculated by drainage area comparison and do not address any withdrawals, discharges, or springs that may lie upstream. The flow frequencies for the gage and the discharge point are presented below. There are no site specific flow values.

Tinker Creek near Daleville, VA (#02055100): (statistical period 1956 - 2003)

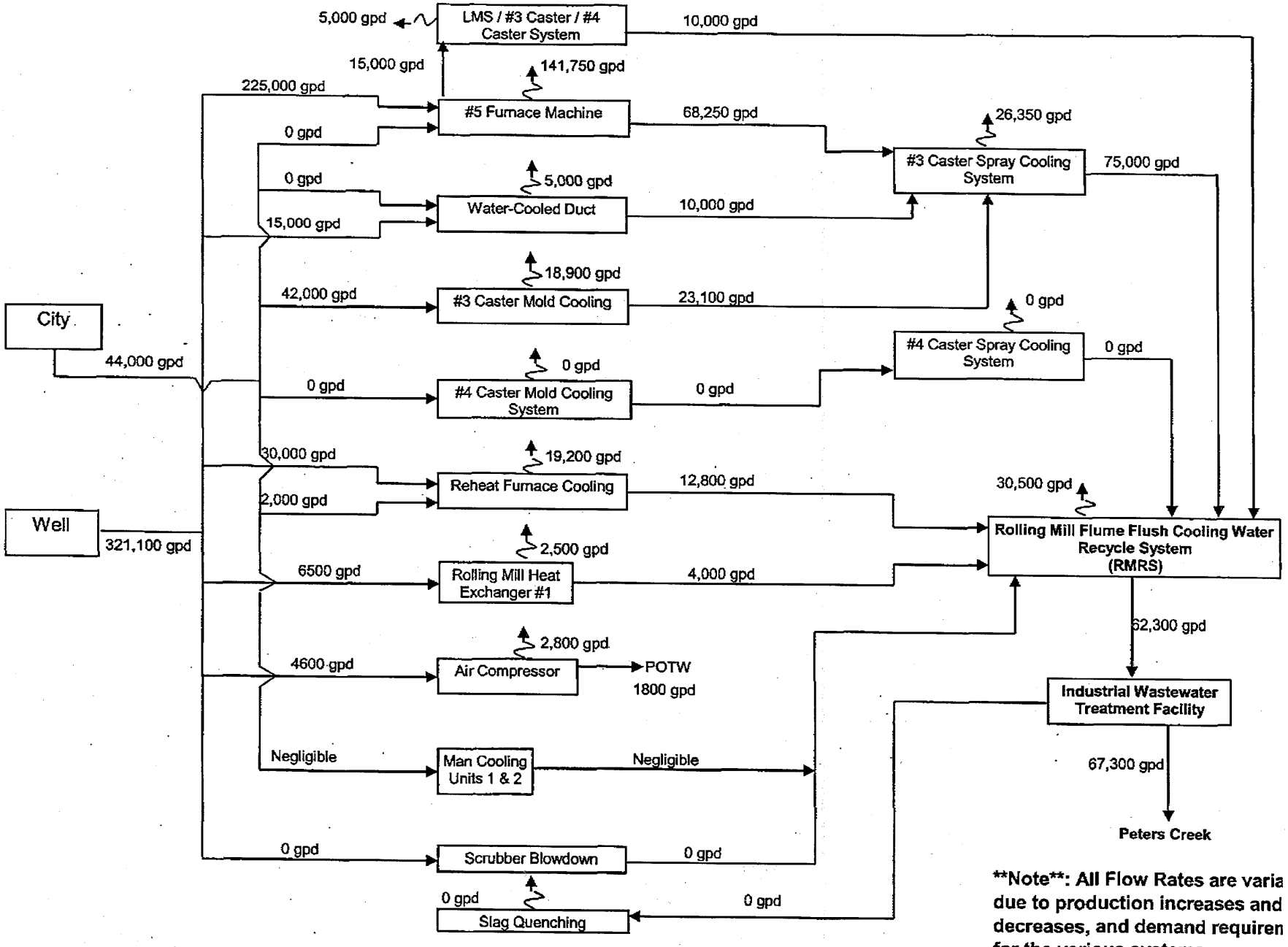
Drainage Area = 11.7 mi^2	30Q5 = 1.6 cfs
Harmonic Mean = 5.0 cfs	30Q10 = 1.2 cfs
High Flow 30Q10 = 3.2 cfs	7Q10 = 1.0 cfs
High Flow 7Q10 = 2.6 cfs	1Q10 = 0.96 cfs
High Flow 1Q10 = 2.3 cfs	1Q30 = 0.65 cfs

Peters Creek at discharge point:

Drainage Area = 8.95 mi^2	30Q5 = 1.22 cfs / 0.79 MGD
Harmonic Mean = 3.82 cfs / 2.47 MGD	30Q10 = 1.07 cfs / 0.69 MGD
High Flow 30Q10 = 2.45 cfs / 1.58 MGD	7Q10 = 0.76 cfs / 0.49 MGD
High Flow 7Q10 = 1.99 cfs / 1.29 MGD	1Q10 = 0.73 cfs / 0.47 MGD
High Flow 1Q10 = 1.76 cfs / 1.14 MGD	1Q30 = 0.50 cfs / 0.32 MGD

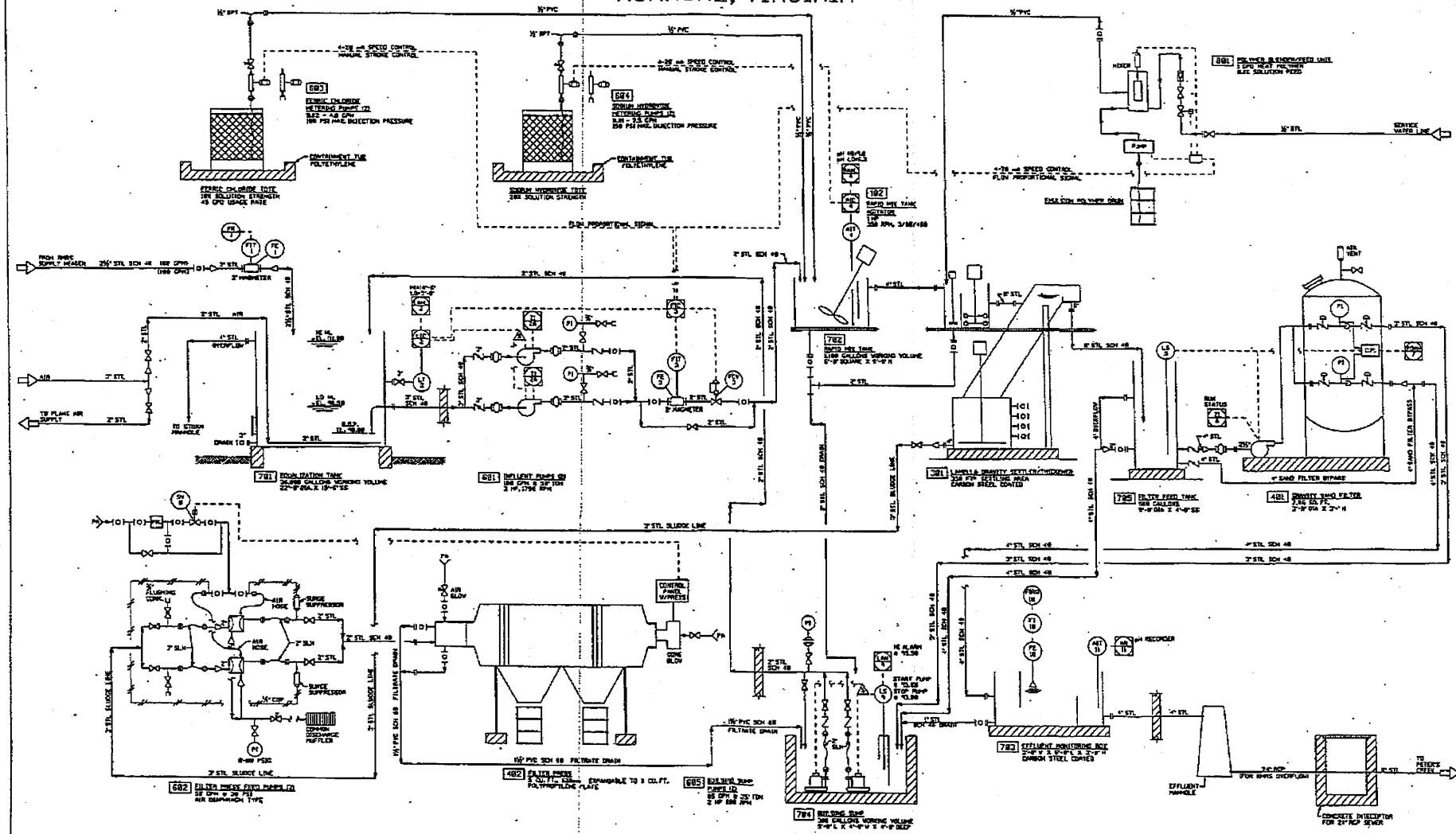
The high flow months are January through May.

Steel Dynamics, Roanoke Bar Division
Process Water Flow Diagram



Note: All Flow Rates are varia due to production increases and decreases, and demand requiren for the various systems.

ROANOKE ELECTRIC STEEL
ROANOKE, VIRGINIA

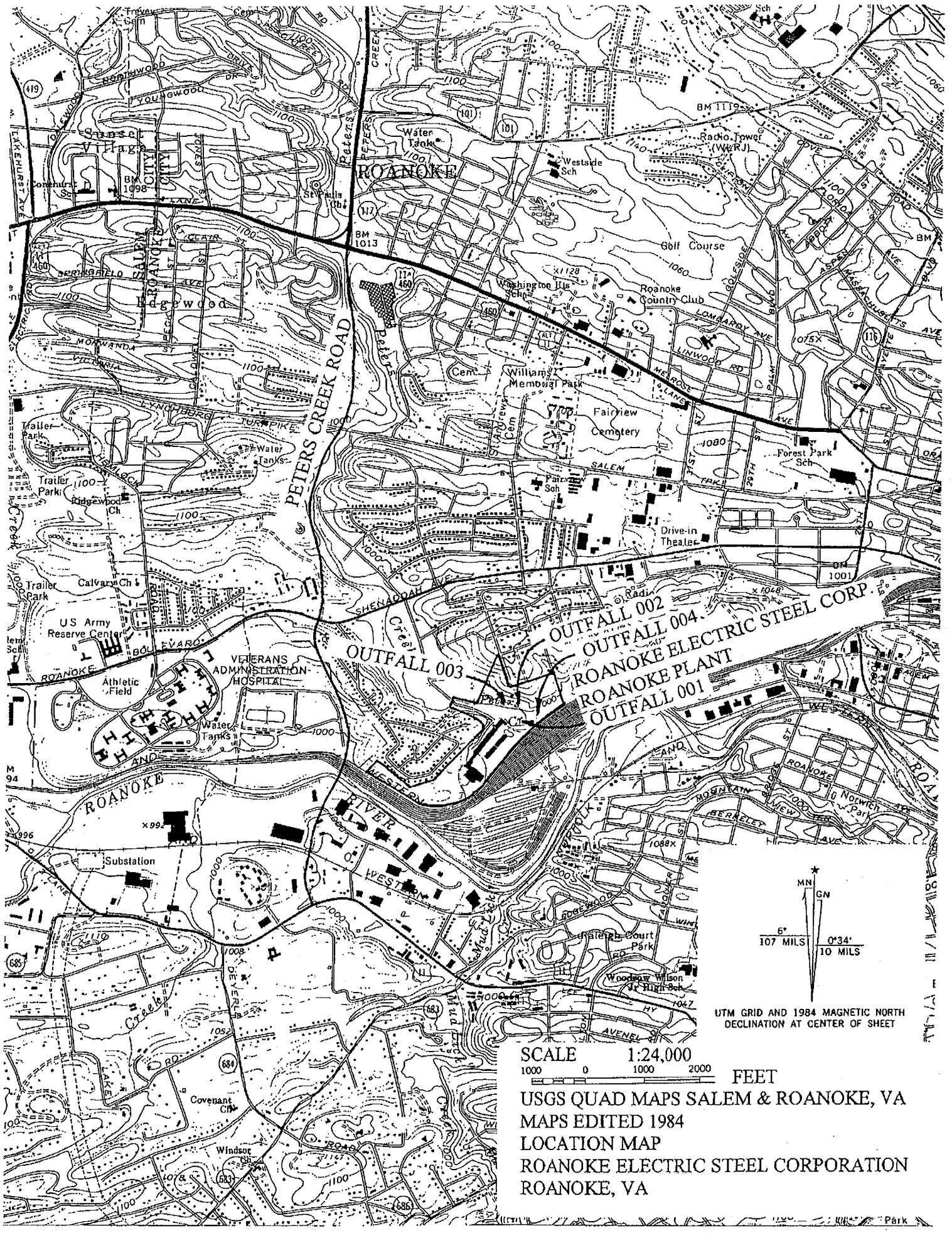


PROCESS FLOW DIAGRAM
EXHIBIT 1

May. 16, 1997 / 08:30

g:\project\461604\o&m\exh-1.dgn May. 16, 1997 08:31:00

461604\O&M\EXH-1.O&M



SCALE 1:24,000

1000 0 1000 2000 FEET

USGS QUAD MAPS SALEM & ROANOKE, VA
MAPS EDITED 1984
LOCATION MAP
ROANOKE ELECTRIC STEEL CORPORATION
ROANOKE, VA

2008 Impaired Waters

Categories 4 and 5 by Basin & Stream Name

Roanoke and Yadkin River Basins

Cause Group Code: **L04R-06-BAC** **Peters Creek**

Location: Peters Creek mainstem from its headwaters (Salem Quad) extending downstream to the Peters Creek confluence on the Roanoke River (Roanoke Quad).

City / County: Roanoke City Roanoke Co.

Use(s): Recreation

Cause(s) /
VA Category: Escherichia coli/ 5A

Escherichia coli (E.coli) replaces fecal coliform bacteria as the indicator as per Water Quality Standards [9 VAC 25-260-170. Bacteria; other waters]. The 2002 303(d) Listed 7.14 mile Peters Creek Recreational impairment remains.

The Roanoke River Bacteria TMDL Study is complete and US EPA approved on 8/02/2006 [FED ID 24538] with SWCB approval on 9/07/2006. 1996 & 2002 fecal coliform (FC) observations are the basis for the original bacteria impaired listing. The 2008 total bacteria impaired length is 29.51 miles on the Roanoke and 350.06 acres in Smith Mountain Lake. The approved TMDL did not specifically address the Peters Creek bacteria Impairment.

4APEE001.04- (Shenandoah Avenue Bridge) Data within the 2008 data window find E.coli exceeds the 235 cfu/100 ml instantaneous criterion in 11 of 32 observations ranging from 250 cfu/100 ml to >2000. The E.coli geometric mean of 126 cfu/100 ml is exceeded in three of five calculations. The 2006 Integrated Report (IR) finds the same range of exceedence and geometric mean excursions from 10 of 20 samples. The original 2002 bacteria 303(d) Listing is based on a Special Study (SS 975101) conducted in 1997 where fecal coliform data resulted in geometric mean exceedences derived from the special study data.

Peters Creek **Recreation**	Estuary (Sq. Miles)	Reservoir (Acres)	River (Miles)
Escherichia coli - Total Impaired Size by Water Type:			**7.14**

Sources:

- Discharges from Municipal Separate Storm Sewer Systems (MS4)
- Municipal (Urbanized High Density Area)
- Unspecified Domestic Waste
- Wet Weather Discharges (Non-Point Source)
- Wildlife Other than Waterfowl

*Narrative descriptions, Location and City/County describes the entire extent of the Impairment. Sizes may not represent the total overall size of the impairment in terms of stream name only.

*Appendix A - List of Impaired (Category 5) Waters in 2008**

Roanoke and Yadkin River Basins

Cause Group Code **L04R-01-BEN** **Roanoke River**

Location: Roanoke River mainstem from the Mason Creek mouth downstream to the mouth of Back Creek.
Note: Impounded waters of Niagara Dam are not included with this impairment.

City / County: Bedford Co. Roanoke City Roanoke Co. Salem City

Use(s): Aquatic Life

Cause(s) / VA Category: Benthic-Macroinvertebrate Bioassessments / 4A Benthic-Macroinvertebrate Bioassessments / 5A

The Roanoke River General Standard - Benthic (Sediment) TMDL Study is complete and US EPA approved 5/10/2006 [Fed. ID - NA]. SWCB approved 9/07/2006. Formerly coded VAW-L04R-01. The benthic impairment is extended downstream with the 2008 Integrated Report (IR) for 3.14 miles from Niagara Dam downstream to the mouth of Back Creek. This portion of the impairment is Category 5A as the TMDL Study did not address these waters. The extension results in a total General Standard (Benthic) impairment of 14.45 miles. The impairment does not include the impounded waters of Niagara Dam.

4AROA212.17- (Rt. 11 Bridge - below Eaton, Inc.) Bio 'IM' There are five Virginia Stream Condition Index (VSCI) surveys (2001-2006) conducted at this site with average seasonal scores of spring 59.6 and fall 57.1 the average score is 58.1. Fewer taxa and fewer sensitive taxa compared to the reference site. The modified family biotic index consistently shows a slight-to-moderate impact from organic pollution. The benthic community appears to be more sensitive to drought conditions.

4AROA206.27- (Wasena Park) Bio 'IM' Four VSCI surveys (2001-2006) with an average score of 57.4. Non-impaired samples showed an increase in diversity and a decrease in pollution tolerant midge larvae; family Chironomidae. Impaired samples showed a decrease in diversity and in increase in pollution tolerant midge larvae; family Chironomidae.

4AROA202.20- (14th Street Bridge - above STP) Bio 'IM' Five VSCI surveys (2001-2005) with an average score of 51.4 finding impairment. Historically sedimentation has decreased the amount of substrate available for macroinvertebrate colonization. The benthic community declined from fall 2001 to fall 2003 and improved during spring and fall 2004. The fall 2004 survey resulted in a non-impaired score of 65.08. This is the highest VSCI score found at this station. This was the only Roanoke River station sampled in fall 2004 and it was used as the benthic macroinvertebrate sample location for a nearby Probabilistic monitoring site (4AROA202.32). The lower limit for a reference site is 60.0.

4AROA198.08- (Explore Park near the Shenandoah Pavilion) Bio 'IM' Two VSCI surveys 2005 and 2006 both fall scores are 56.3 and 55.0. Both surveys had benthic communities dominated by net-spinning caddisfly larvae (Hydropsychidae). These organisms typically dominate streams that have high amounts of organic matter. Both surveys had low numbers of pollution sensitive taxa such as mayflies and stoneflies. In stream habitat, riparian zone vegetation, and bank stability are all optimal providing conditions favorable for a healthy benthic community. However, algae (filamentous and periphyton) growth is thick on stream substrates indicating that nutrients may be excessive.

Roanoke River **Aquatic Life**	Estuary (Sq. Miles)	Reservoir (Acres)	River (Miles)
Benthic-Macroinvertebrate Bioassessments - Total Impaired Size by Water Type:			**14.45**

Sources:

Discharges from Municipal Separate Storm Sewer Systems (MS4)	Drought-related Impacts	Industrial Point Source Discharge	Industrial/Commercial Site Stormwater Discharge (Permitted)
Municipal (Urbanized High Density Area)	Municipal Point Source Discharges	Post-development Erosion and Sedimentation	Residential Districts
Sediment Resuspension (Clean Sediment)	Sediment Resuspension (Contaminated Sediment)	Wet Weather Discharges (Point Source and Combination of Stormwater, SSO or CSO)	

*Appendix A - List of Impaired (Category 5) Waters in 2008**

Roanoke and Yadkin River Basins

Cause Group Code **L12L-01-PCB** **Roanoke River, Blackwater River, Smith Mountain Lake, Tinker Creek and Peters Creek.**

Location: Roanoke River from the confluence of the North and South Forks downstream to Smith Mtn. Dam. Blackwater River from the Rt. 122 crossing downstream to its confluence with the Roanoke River in Smith Mtn. Lake. Peters Creek from the Rt. 460 Bridge downstream to its confluence on the Roanoke River. Tinker Creek from the mouth of Deer Branch downstream to the Tinker Creek confluence on the Roanoke River.

City / County: Bedford Co., Botetourt Co., Franklin Co., Montgomery Co., Pittsylvania Co., Roanoke City, Roanoke Co., Salem City

Use(s): Fish Consumption

Cause(s) / VA Category: PCB in Fish Tissue / 5A

The waters of the Roanoke River (31.74 miles), Blackwater River (11.29 miles), Peters Creek (2.52 miles), Tinker Creek (5.33 miles) and Smith Mountain Lake (19,789.92 acres) are under a Virginia Department of Health (VDH) Fish Consumption Advisory for Polychlorinated Biphenols (PCB) issued 7/27/05. The VDH Advisory is based on fish tissue found to contain greater than 50 ppb of PCBs. The previous advisory (issued 10/20/03) recommended that no more than two eight-ounce meals per month of flathead catfish (less than 32 inches in size), striped bass, gizzard shad, redhorse sucker, largemouth bass and carp should be consumed. Per the previous advisory, flathead catfish (greater than 32 inches in size) should not be eaten. The advisory has been updated to also recommend that no more than two eight-ounce meals per month of channel catfish should be consumed.

There are 10 fish tissue collection sites within the 2008 data window reporting exceedences of the DEQ WQS 54 ppb fish tissue value (TV). These data are reviewed by the VDH in making an advisory determination. A complete listing of collection sites and associated fish tissue data are available at http://www.deq.virginia.gov/fishtissue/fishtissue.html. A more detailed presentation of the data can also be found using an interactive mapping application at http://gisweb.deq.state.va.us/. The VDH Advisory information is also available via the web at http://www.vdh.virginia.gov/Epidemiology/PublicHealthToxicology/Advisories/.

Roanoke River, Blackwater River, Smith Mountain Lake, Tinker Creek and Peters Creek.	Estuary (Sq. Miles)	Reservoir (Acres)	River (Miles)
Fish Consumption			
PCB in Fish Tissue - Total Impaired Size by Water Type:		**19,789.92**	**50.88**

Sources:

Source Unknown

Bacteria TMDLs for Wilson Creek, Ore Branch and Roanoke River Watersheds, Virginia

Submitted by

Virginia Department of Environmental Quality

Prepared by

and

THE Louis Berger Group, INC.
2300 N Street, NW
Washington, DC 20037

February 2006

Table 4-4: Permitted Dischargers in the Wilson Creek, Ore Branch, and Roanoke River Watersheds

Permit Number	Facility Name	Facility Type	Design Flow (mgd)	Receiving Waterbody	Ave. Bacteria Conc. (cfu/100 mL)	Status
VA0001252	Associated Asphalt Inc	I	0.054	Roanoke River	N/A	Active
VA0001333	Koppers Inc	I	0.6	Roanoke River	N/A	Active
VA0001431	Motiva Enterprises LLC - Roanoke	I	5.32	Back Creek, UT	N/A	Active
VA0001473	Roanoke City - Carvins Cove Water Filtration Plant	I	0.474	Carvin Creek, UT	N/A	Active
VA0001589	Roanoke Electric Steel (RES) Corporation	I	0.039	Peters Creek	N/A	Active
VA0001597	Norfolk Southern Railway Co - Shaffers Crossing	I	0.050	Hortons Branch; Lick Run, UT	N/A	Active
VA0024031	Shawsville Town - Sewage Treatment Plant	M	0.2	South Fork Roanoke River	25.3	Active
VA0025020	Western Virginia Water Authority	M	62	Roanoke River	Below permitted limits	Active
VA0027481	Blacksburg Country Club Sewage Treatment Plant	M	0.035	North Fork Roanoke River	N/A	Active
VA0028711	Suncrest Heights	M	0.020	Back Creek, UT	N/A	History
VA0062219	Montgomery County PSA - Elliston-Lafayette WWTP	M	0.25	South Fork Roanoke River	N/A	Active
VA0077895	Roanoke Moose Lodge	M	0.0047	Mason Creek	N/A	Active
VA0086541	Marathon Ashland - Roanoke Terminal	I	1.47	Back Creek, UT	N/A	Active
VA0087092	American Electric Power - Niagara Hydro Plant	I	0.143	Roanoke River	N/A	Active
VA0088358	Fred Whitaker Co	I	0.151	Roanoke River	N/A	Active
VA0089702	Safety Kleen Systems Inc.	I	NA	NA	N/A	History
VA0089991	Federal Mogul Corp - Blacksburg	I	0.065	Wilson Creek, UT	N/A	Active
VA0091065	Crystal Springs WTP	I	0.092	Roanoke River	N/A	Active

mgd: Million Gallons per Day
N/A: Data not available or not applicable
I: Industrial; M: Municipal

FINAL
Roanoke River PCB TMDL Development (Virginia)

December 2009

Prepared for: United States Environmental Protection Agency, Region 3

Prepared by: Tetra Tech, Inc.; 10306 Eaton Place, Suite 340, Fairfax, VA 22030

[Approved by EPA on April 9, 2010]

Excerpts regarding Peters Creek Allocations

6. TMDL Allocation Analysis

In TMDL development, allowable loadings from pollutant sources are established and when summed, are equivalent to the TMDL which forms the basis for the requirement of water quality-based controls. TMDLs can be expressed on a mass loading basis (e.g., grams of pollutant per day) or as a concentration in accordance with 40 CFR 130.2(I).

Tables 6-1 and 6-2 present a summary of the WLAs, LAs, and TMDLs, developed for streams in the upper and lower watershed sections on an average annual and daily basis, respectively. As tPCBs bioaccumulate in fish tissue over time, it is more appropriate to express the loads on an annual basis. WLAs and LAs were assigned on the basis of the assimilative capacity of the Roanoke River watershed. Source load allocations for this TMDL scenario are presented in the following sections. Average daily loads were calculated as the average annual load divided by 365.

Table 6-1. Average annual tPCBs TMDLs for Roanoke River watershed streams

Stream	2008 303(d) list ID	Baseline (mg/yr)	WLA (mg/yr)	LA (mg/yr)	MOS (mg/yr)	TMDL (mg/yr)	% Reduction
Upper Roanoke River							
Peters Creek	L12L-01-PCB	1,742.6	65.4	31.2	5.1	101.7	94.2

Table 6-2. Average daily tPCBs TMDLs for Roanoke River watershed streams

Stream	2008 303(d) list ID	Baseline (mg/d)	WLA (mg/d)	LA (mg/d)	MOS (mg/d)	TMDL (mg/d)	% Reduction
Upper Roanoke River							
Peters Creek	L12L-01-PCB	4.774	0.179	0.086	0.014	0.279	94.2

6.1. Wasteload Allocations

Federal regulations (40 CFR 130.7) require TMDLs to include individual WLAs for each point source. WLAs contain the allowable loadings from existing and future point sources. The WLA portion of the TMDL includes the traditional point source discharges, individually permitted stormwater dischargers, and MS4s. WLAs for point source categories in Roanoke River watershed streams grouped by watershed section are presented in Table 6-3. WLA's for individual point sources, permitted stormwater dischargers, and MS4s are presented in Tables 6-4 through 6-6. Note that the loads calculated for all WLA sources are estimates. Loads assigned to traditional point sources were derived from one or two samples of effluent tPCBs concentrations and loads attributed to stormwater dischargers and MS4s are based on estimates of upland soil tPCBs concentrations (see Appendix G). In all cases additional PCB monitoring will have to be performed.

For this TMDL, the VADEQ agreed to apply a consistent approach to all traditional point sources for determining WLAs. The allocations are derived as facility design flow multiplied by the applicable watershed section water column target. In some cases, because current flows are less than facility design flows, this approach results in a TMDL WLA that is larger than the estimated baseline load, which is indicated by negative reduction values in Table 6-4.

Table 6-3. Average annual tPCBs WLAs for Roanoke River watershed streams

Stream	Point sources			Stormwater dischargers[a]			MS4s		
	Baseline (mg/yr)	WLA (mg/yr)	% Reduction[b]	Baseline (mg/yr)	WLA (mg/yr)	% Reduction[b]	Baseline (mg/yr)	WLA (mg/yr)	% Reduction[b]
Upper Roanoke River									
Peters Creek[c]	90.7	50.8	44.0	1.4	0.0	99.1	1,542.2	14.6	99.1

Table 6-4. Point source tPCBs WLAs

Stream	NPDES ID	Facility	Pipe	Baseline (mg/yr)	WLA (mg/yr)	% Reduction[a]
Upper Roanoke River						
Peters Creek	VA0001589	Steel Dynamics	5	90.7	50.8	44.0
Peters Creek Total[b]				90.7	50.8	44.0

Table 6-5. Permitted stormwater dischargers tPCBs WLAs[a]

Stream	NPDES ID[b]	Stormwater discharger	Baseline (mg/yr)	WLA (mg/yr)	% Reduction[c]
Peters Creek	VA0001589	Steel Dynamics	1.44	0.01	99.050
Peters Creek Total[d]			1.44	0.01	99.050

Table 6-6. MS4 tPCBs WLAs

Stream	MS4	Baseline (mg/yr)	WLA (mg/yr)	% Reduction[a]
Upper Roanoke River				
Peters Creek	City of Salem	18.6	0.2	99.050
Peters Creek	Roanoke City	1,033.7	9.8	99.054
Peters Creek	Roanoke County	490.0	4.7	99.050
Peters Creek Total[b]		1,542.2	14.6	99.053

6.2. Load Allocations

Generally, the LA is the amount of a pollutant contributed to the waterbody by nonpoint sources. For the purposes of this TMDL, nonpoint sources have been grouped into current and legacy sources. Current nonpoint sources include contributions of PCBs to the Roanoke River watershed from runoff of contaminated sites not within the spatial extent of MS4s or areas permitted for stormwater discharges. Contaminated sites have been categorized as known contaminated sites and urban background including unidentified contaminated sites. Legacy nonpoint sources include atmospheric deposition to surface waters and historically contaminated streambed sediment in the river.

Loadings from contaminated streambed sediments have been excluded from the TMDLs.

LAs for nonpoint source categories in Roanoke River watershed streams grouped by watershed section are presented in Table 6-7. Note that the loads calculated for all LA sources are estimates. Loads assigned to contaminated sites are based on estimates of upland soil PCB concentrations, while loads attributed to atmospheric deposition are based on literature sources (see Appendix G). In both cases additional PCB monitoring will have to be performed.

Table 6-7. Average annual tPCBs LAs for Roanoke River watershed streams

Stream	Known contaminated sites			Urban background/unidentified contaminated sites			Atmospheric deposition		
	Baseline (mg/yr)	LA (mg/yr)	% Reduction[a]	Baseline (mg/yr)	LA (mg/yr)	% Reduction[a]	Baseline (mg/yr)	LA (mg/yr)	% Reduction[a]
Upper Roanoke River									
Peters Creek[d]	0.0	0.0	0.0	76.1	0.7	99.1	32.1	30.5	5.0

Benthic TMDL Development for the Roanoke River, Virginia

Submitted to

Virginia Department of Environmental Quality

Prepared by

THE Louis Berger Group, INC.
2300 N Street, NW
Washington, DC 20037

March 2006

7.1.2 Wasteload Allocation

The wasteload allocated to point sources in the watershed was based on the permitted discharge loading rate for total suspended solids for each facility as shown in Table 7-1. Because the facilities typically contribute only non-settleable solids, and their overall contribution to the total annual watershed sediment load is small, no reductions are required for these sources.

The Cities of Roanoke and Salem, as well as portions of Roanoke, Botetourt, and Montgomery Counties, and three facilities located within the Roanoke City metropolitan area, are covered by MS4 permits which are included in the wasteload allocations. As discussed in Section 6.0, land-based loads were allocated to the MS4 based on an area weighted method. The MS4 wasteload allocations by land use type for all the permitees are presented in Table 7-2. Table 7-3 shows the individual sediment allocation for each MS4 urban area. As indicated in Table 7-2, a 69.5 percent reduction in urban, agricultural, and transitional land-based sources and instream erosion allocated to the MS4s is required to achieve the TMDL endpoint. Wasteload allocations were based on an equal percent reduction from controllable sources. Loads from forested lands are considered to be representative of the natural condition and therefore were not subject to reductions.

Wasteload allocations for facilities in the watershed holding general stormwater permits are presented in Appendix D. The majority of the facilities holding general stormwater permits is located in areas covered by MS4 permits, and is thus included in the MS4 wasteload allocation.

Appendix D provides a finer breakdown of the wasteload allocation by providing specific wasteload allocations for each facility holding a general stormwater permit.

Table 7-1: Point Source Wasteload Allocations for Roanoke River

Facility Name	Permit Number	Annual Sediment Loads (tons/yr)	Allocated Loads (tons/yr)	Percent Reduction
Western Virginia Water Authority	VA0025020	472.2	472.2	0
Roanoke Electric Steel Corporation	VA0001589	92.9	92.9	0
Shawville Town STP	VA0024031	9.1	9.1	0
Carvin Cove Water Filtration Plant	VA0001473	17.6	17.6	0
Crystal Springs WTP	VA0091065	8.8	8.8	0
Norfolk Southern Railway Company - Shaffers Crossings	VA0001597	1.62	1.62	0
Ellison Lafayette WWTP	VA0062219	11.2	11.2	0
Blacksburg Country Club STP	VA0027481	1.57	1.57	0
Roanoke Moose Lodge	VA0077895	0.21	0.21	0
		Total Allocated Load	615.3	0

Table 7-2: MS4 Wasteload Allocation by Land Use Type

Source	Land Use Type	Average Annual Sediment Load (tons/yr)		Percent Reduction
		Existing	Allocated	
Point Sources - MS4s	Open Water	0.0	0.0	0
	Low Intensity Residential	125.0	38.1	69.5
	High Intensity Residential	72.5	22.1	69.5
	Commercial/Industrial	3239.3	988.9	69.5
	Quarries/Strip Mines	401.4	122.6	69.5
	Transitional	321.7	98.1	69.5
	Deciduous Forest	78.6	78.6	0
	Evergreen Forest	6.1	6.1	0
	Mixed Forest	29.3	29.3	0
	Pasture/Hay	527.0	160.7	69.5
	Row Crop	203.7	62.3	69.5
	Urban/Recreational Grasses	31.8	9.7	69.5
	Woody Wetlands	0.0	0.0	0
	Emergent Wetlands	0.0	0.0	0
	Instream Erosion	9686.8	2956.4	69.5
Total		**14,723**	**4,573**	**69.5**

APPENDIX D: General Permit & Individual Permit Stormwater TMDL Allocations

The TSS allocation for each permitted facility was calculated using a DEQ assigned TSS concentration and the corresponding runoff amount generated on the site based on the facility area or the facility discharge. The TSS allocated load for each permit type was calculated as follows:

- For individual permitted facilities, the allocated load was calculated based on a TSS concentration of 100 mg/L, the facility area, and 72.54 cm of runoff per year. The annual average runoff of 72.54 cm corresponds to an annual average rainfall of 40.8 inches (103.63 cm) and an industrial land cover with 70 percent imperviousness.
- For general stormwater permits issued to industrial facilities, the allocated load was calculated based on a TSS concentration of 100 mg/L, the facility area, and 72.54 cm of runoff per year.
- For general permits issued to domestic sewage facilities, the allocated load was calculated based on a TSS concentration of 30 mg/L and a flow value of 1,000 gallons per day.
- For general permits issued to mines, the allocated load was calculated based on a TSS concentration of 30 mg/L, the facility area, and 45.9 cm of runoff per year.
- For general permits issued to concrete facilities, the allocated load was calculated based on a TSS concentration of 30 mg/L, the facility area, and 72.54 cm of runoff per year.
- For general stormwater permits issued to carwashes, the allocated load was calculated based on a TSS concentration of 60 mg/L, the facility area, and 72.54 cm of runoff per year.
- For general stormwater permits issued to construction sites, the total allocated load was calculated based on a per acre loading unit of 10.97 metric tons of sediment per hectare, the disturbed construction area, and a sediment delivery ratio of 0.136. Table D-7 depicts the combined sediment load from all construction sites based on an average annual disturbed area of 467 acres. The average annual acreage of 467 acres was derived using information from the VADEQ Comprehensive Environmental Database System (CEDS) database for the period of 2002 to 2004.

Table D-1: Stormwater TMDL Allocations for Individual Permitted Facilities

Permit Number	Facility	TSS Stormwater Allocation (tons/yr)
VA0001252	Associated Asphalt Inc.	2.78
VA0001333	Koppers Inc.	18.24
VA0001589	Roanoke Electric Steel Corp.	56.55
VA0001511	Norfolk Southern Railway Co - East End Shops	35.70
VA0001597	Norfolk Southern Railway Co. - Shaffers Crossing	28.83
VA0025020	Western Virginia Water Authority	34.17
VA0088358	Fred Whitaker Co.	0.97
VA0089991	Federal Mogul Corp.	12.30

Table D-2: TMDL Allocations for General Stormwater Permits Issued to Industrial Facilities

Permit Number	Facility	Receiving Waterbody	MS4 Area	TSS Allocation (tons/yr)
VAR050027	Auto Salvage & Sales, Inc.	Tinker Creek	Roanoke City	0.53
VAR050134	Greater Roanoke Transit Company	Lick Run	Roanoke City	0.81
VAR050135	Virginia Scrap Iron & Metal Company Inc	Roanoke River	Roanoke City	1.66
VAR050143	Virginia Scrap Iron & Metal Incorporated	Roanoke River	Roanoke City	1.66
VAR050144	North 11 Asphalt Plant - Roanoke	Carvins Creek	Roanoke City	27.43
VAR050145	Holland-Richards Vault Service	Mason Creek	Roanoke City	0.25
VAR050178	BFI Waste Systems LLC - Roanoke	Roanoke River	Roanoke City	0.63
VAR050207	1915 Plantation Rd LLC	Lick Run	Roanoke City	0.63
VAR050208	Walker Machine & Foundry Corp	Roanoke River	Roanoke City	2.40
VAR050272	Roanoke Regional Airport	Deer Creek	Roanoke City	179.22
VAR050273	Ralph Smith Inc Steel Fabrication	Roanoke River UT	Roanoke City	0.67
VAR050274	USPS Roanoke Vehicle Maintenance Service	Roanoke River	Roanoke City	3.56
VAR050275	Old Dominion Auto Salvage	Tinker Creek	Roanoke City	3.46
VAR050436	Norfolk Southern Corp - Roadway Material Yard	Roanoke River	Roanoke City	0.49
VAR050437	Estes Express Lines Incorporated	Roanoke River, UT	Roanoke City	2.33
VAR050460	Yellow Freight System Inc	Tinker Creek	Roanoke City	1.62
VAR050496	Federal Express Corp - ROAA Station	Lick Run	Roanoke City	1.69
VAR050516	Mennel Milling Company	Roanoke River	Roanoke City	0.32
VAR050519	FedEx Freight East, Inc.	UT to Lick Run	Roanoke City	1.73
VAR050520	O'Neal Steel Inc	Tinker Creek	Roanoke City	6.46
VAR050522	Progress Rail Services Corp - Roanoke	Roanoke River	Roanoke City	3.95

MEMORANDUM
VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY
BLUE RIDGE REGIONAL OFFICE - Roanoke
WATER DIVISION

3019 Peters Creek Road **Roanoke, Virginia 24019-2738**

Subject: Site visit Steel Dynamics dba Roanoke Electric Steel (SDI) in conjunction with VPDES permit reissuance VA0001589 - stormwater focus

From: Susan K. Edwards, Environmental Engineer Sr.

To: Fact Sheet

Date: July 10, 2009

GENERAL INFORMATION

An unannounced site visit, with BRRO-R water inspector Gerald Duff, was made on July 8, 2009. SDI is located at the end of Westside Boulevard in the city of Roanoke. Telephone number (540)342-1831. Cary Lester is the Director of Environmental Affairs for the plant and Jeff Kiser is the Environmental Supervisor. The discharge VPDES permit is an industrial major.

The industrial discharge results from the refining of scrap metal into steel billets to produce hot rolled bars, bar shapes and structural steel. The site also discharges storm water associated with industrial activity. This site visit specifically focused on storm water issues at the site.

Before walking the property we sat down with Mr. Lester and Mr. Kiser to discuss stormwater at the site and the major changes to the stormwater discharges that are under construction. The stormwater construction activities are covered under an erosion & sediment control plan with the city of Roanoke. However, application for permitting of the additional stormwater outfalls associated needs to be submitted soon to be incorporated into the next reissuance or as a revoke & reissuance of the permit. It was emphasized that the incorporation of the new outfalls need to be ready when the discharges convert from coverage under E&SC Construction activity to stormwater associated with industrial activity under the VPDES Permit. Gerald reviewed and discussed the SWPPP with Mr. Lester and Mr. Kiser. They discussed some follow-up items needed from Steel Dynamics and what can be expected in follow-up from the site visit. Discussion included pH concerns in stormwater and the recent submittal of a Registration Statement for coverage under the VPDES General Permit for Discharge of Stormwater Associated with Industrial Activity for SDI slag processing by Phoenix on adjacent property.

Since the last reissuance significant changes have taken place with the industrial plant and the plant property. Within the plant building an industrial spill plan that includes providing a system of central trench drains that drain to the building floor sump to prevent release of any spills from the mill. A site-wide industrial stormwater contact source is from stormwater contact with fugitive particulates from the mill air-pollution control system. The plant's SWPPP does utilize street-sweeping of paved areas, but the wholesale replacement of the air-pollution collection and control system is expected to greatly reduce this source of potential stormwater contact with industrial material. In comparison to previous site visit it is obvious SDI has reduced the exposure risks of materials to stormwater in the volume of materials stored outside. Mr. Lester emphasized that SDI plans to continue this effort.

However, even with housekeeping practices, replacing the air pollution control system and reducing the amount of material stored where it may impact stormwater quality it is believed the site has an underlying legacy stormwater problem. That is the use of slag on the property. Slag is believed to have been used historically as the fill material all over the property and it is expected that the contact of stormwater with this material greatly impacts the quality of stormwater with impact on pH, solids and metals. This may also be a contributing factor in the sensitivity of Ceriodaphnia to outfall 001 stormwater.

Stormwater is discharged from existing outfalls 001, 002 and 003. Stormwater from the drainage area designated as outfall 004 actually drains to Peters Creek by sheet flow with no distinct discharge point. A drainage area map that is part of the stormwater pollution prevention plan indicates areas where materials are stored. The nature of the industrial activity includes considerable outside materials storage. Most drainage areas include significant activity that would be impractical to place under cover. During the current permit term efforts to improve the quality of storm water have focused on "house-keeping" measures. Outfall 001 continues to be a significant concern over the quality of the effluent because of the amount of industrial activity and material storage associated with that drainage area.

New outfalls labeled as 006, 007 and 008 for the new area of property development were visited. There is significant run-on from the Phoenix slag processing site. Bank rill erosion is evident across vast areas of the graded cut areas down to the operation yard of the expanded site. The run-on from Phoenix appears to contribute to the difficulties in establishment of cover on the banks along the boundary between the properties. It is expected that vegetative cover on the banks will be established and erosion will be under control before the E&SC bond for the construction activity will be released by the City. Because the drainage area associated with outfall 008 includes a large detention basin this outfall is not expected to discharge on a routine basis if at all.

New monitoring associated with stormwater permit coverage will demonstrate if the new air pollution control baghouse will result in improved stormwater quality in conjunction with on-going stormwater pollution prevention house-keeping. With so much slag across the property it may be difficult to significantly improve stormwater quality without installation of physical stormwater quality measures. Perhaps some vegetative buffers acting as stormwater filters may be sited to benefit the quality of discharge from some outfalls. Ultimately the facility may need to incorporate stormwater quality filter materials in the collection system.

STORET data summary

Station 4APEE001.04

Peters Creek at Shendoah Avenue bridge

Collection Date		Temp. (C)	pH (SU)	Total Hardness (mg/L CaCO3)	
26-Jul-1994		23.1	8.2	182	
25-Oct-1994		17.5	8.6	180	
17-Jan-1995	w	10.9	7.8	98	
22-Jun-1995		23.1	8.06	NULL	
10-Oct-1995		18.6	8.1	201	
22-Jan-1996	w	2.5	8.1	127	
8-Apr-1996	w	10.3	8.9	136	
18-Jul-1996		24	8.2	164	
15-Oct-1996		17	8.5	191	
13-Jan-1997	w	5	8.2	173	
7-Apr-1997	w	19.6	8.6	186	
31-Jul-1997		23	8.3	202	
15-Oct-1997		17.6	8.3	184	
29-Jan-1998	w	8.6	7.4	82	
30-Mar-1998	w	20.7	8.9	144	
13-Jul-1998		23.5	8.4	158	
22-Oct-1998		12.3	8.1	192	
25-Jan-1999	w	10.3	8.0	148	
12-Apr-1999	w	13.8	7.8	120	
10-Aug-1999		25.2	8.7	180	
7-Oct-1999		16.2	8.3	186	
20-Dec-1999		10.3	8.4	141	
10-Feb-2000	w	8	8.4	164	
6-Apr-2000	w	19	8.2	151	
20-Jun-2000		23.4	8.6	159	
18-Jul-2000		21.7	8.3	166	
19-Sep-2000		18.3	8.5	67	
9-Nov-2000		13.2	8.8	154	
18-Jan-2001	w	6.8	8.3	194	
19-Mar-2001	w	12.3	8.5	157	
1-May-2001	w	20.7	8.7	149	
15-Jul-2003		21.61	8.22		
15-Sep-2003		19.24	8.01	153.45	< geom. mean
24-Nov-2003		10.6	7.9		
29-Jan-2004	w	2.6	7.67		
24-Mar-2004	w	8.1	8.1		
4-May-2004	w	15.57	8.2		
13-Jul-2004		22.4	7.47		
15-Sep-2004		17.91	7.59		
16-Nov-2004		9.96	7.91		
26-Jan-2005	w	7.25	8.29		
22-Mar-2005	w	12.4	7.57		
9-May-2005	w	15.5	8.09		
13-Jul-2005		20.7	8.0		
19-Sep-2005		17.8	8.0		
28-Nov-2005		8.9	7.3		
10-Jan-2006	w	10.6	8.8		
8-Mar-2006	w	10.4	8.2		
4-May-2006	w	15.3	6.8		
17-Jul-2006		21.5	8.0		
12-Sep-2006		17.3	8.1		
7-Nov-2006		8.9	7.5		
8-Apr-2010	w	16.9	6.9		
19-Apr-2010	w	15.1	8.0		
90th% annual temp>		23.07	8.67	< 90th percentile value	
90th% wet temp>		19.36	7.52	< 10th percentile value	

(w=wet months Jan - May)

VPDES Permit VA0001589
Steel Dynamics, Roanoke Bar Division
Reissuance 2011

ATTACHMENT B

1. 3-year summary of discharge data from Discharge Monitoring Reports for Outfall 005 - flow, TSS, temperature, oil & grease, total residual chlorine, harness, pH, copper, lead and zinc

2. Memorandum regarding outfall 005 WET monitoring

3. Output from mix analysis MIX.exe

4. Memo Evaluation of Federal Effluent Guideline Based Limits including excerpt from Federal Effluent Guideline 40 CFR 420 Iron and Steel Industry, Subparts F – Continuous Casting and G – Hot Forming Primary Mills (without scarfing)

Roanoke Electric Steel Corporation
Permit No: VA0001589

Outfall No:005

DMR Due date	Flow (MGD) Average	Flow (MGD) Maximum	Temp. (C) maximum
10-May-2007	0.0627	0.0883	28.7
10-Jun-2007	0.0716	0.0875	29.1
10-Jul-2007	0.0723	0.0949	28.8
10-Aug-2007	0.0811	0.0978	29.7
10-Sep-2007	0.0897	0.1084	30.3
10-Oct-2007	0.0774	0.0946	28.1
10-Nov-2007	0.0773	0.0996	29.6
10-Dec-2007	0.0720	0.1013	29.1
10-Jan-2008	0.0799	0.1101	22.8
10-Feb-2008	0.0590	0.0961	21.5
10-Mar-2008	0.0823	0.1228	27.5
10-Apr-2008	0.0871	0.1335	23.9
10-May-2008	0.0832	0.1053	26.3
10-Jun-2008	0.0825	0.1129	29.6
10-Jul-2008	0.0829	0.1088	28.8
10-Aug-2008	0.0821	0.1098	28.1
10-Sep-2008	0.0850	0.1179	29.4
10-Oct-2008	0.0868	0.1086	29.1
10-Nov-2008	0.0639	0.1013	26.9
10-Dec-2008	0.0542	0.0911	23.2
10-Jan-2009	0.0548	0.0893	27.8
10-Feb-2009	0.0527	0.0840	21.1
10-Mar-2009	0.0552	0.0941	22.1
10-Apr-2009	0.0648	0.1084	26.2
10-May-2009	0.0563	0.0891	26.4
10-Jun-2009	0.0690	0.1105	25.7
10-Jul-2009	0.0789	0.0990	30.0
10-Aug-2009	0.0811	0.1010	29.6
10-Sep-2009	0.0684	0.0966	29.9
10-Oct-2009	0.0932	0.1276	28.6
10-Nov-2009	0.0783	0.1135	25.7
10-Dec-2009	0.0526	0.1268	22.9
10-Jan-2010	0.0625	0.1098	19.9
10-Feb-2010	0.0750	0.1045	27.4
10-Mar-2010	0.0582	0.0981	21.6
10-Apr-2010	0.0672	0.1032	23.4
Limit	NL	NL	31
			29.65 < 90th percentile for use in WLA spreadsheet
Average:	0.0723		29.65 < 90th percentile wet season temperature
Max. 30-day avg.	0.0932		Jan - May

DMR Due date	TSS (kg/day) load average	TSS (kg/day) load maximum	Oil & Grease (kg/day) load average	Oil & Grease (kg/day) load maximum
10-Jul-2007	0.24	0.24	<QL	<QL
10-Oct-2007	1.06	1.06	<QL	<QL
10-Jan-2008	1.22	1.22	21.3	21.3
10-Apr-2008	0.3	0.3	<QL	<QL
10-Jul-2008	4.46	4.46	<QL	<QL
10-Oct-2008	3.54	3.54	<QL	<QL
10-Jan-2009	0.41	0.69	<QL	<QL
10-Apr-2009	<QL	<QL	134.1	228.7
10-Jul-2009	<QL	<QL	<QL	<QL
10-Oct-2009	<QL	<QL	<QL	<QL
10-Jan-2010	<QL	<QL	<QL	<QL
10-Apr-2010	<QL	<QL	<QL	<QL
Limit	113	318	30.6	86.5

DMR Due date	TRC (ug/L) conc. average	TRC (ug/L) conc. maximum
10-Jul-2007	<QL	<QL
10-Oct-2007	<QL	<QL
10-Jan-2008	<QL	<QL
10-Apr-2008	<QL	<QL
10-Jul-2008	<QL	<QL
10-Oct-2008	<QL	<QL
10-Jan-2009	<QL	<QL
10-Apr-2009	<QL	<QL
10-Jul-2009	<QL	<QL
10-Oct-2009	<QL	<QL
10-Jan-2010	<QL	<QL
10-Apr-2010	<QL	<QL
Limit	53	108

Hardness sample date	Hardness conc. (mg/L)
29-Jun-2005	380
30-Jun-2005	410
1-Jul-2005	430
9-May-2006	380
10-May-2006	340
12-May-2006	348
8-May-2007	284
9-May-2007	292
11-May-2007	240
27-May-2008	308
28-May-2008	320
29-May-2008	340
22-Sep-2009	388
23-Sep-2009	307
25-Sep-2009	316
Geo Mean	335

Roanoke Electric Steel Corporation **Outfall No:005**
Permit No: VA0001589

DMR due date	pH (s.u.) minimum	pH (s.u.) maximum	pH excursion time (minutes) total	pH individual excursion time (minutes) min.	pH individual excursion time (minutes) max.
10-May-2007	7.06	8.22	0	0	0
10-Jun-2007	7.27	8.15	0	0	0
10-Jul-2007	6.98	8.26	0	0	0
10-Aug-2007	6.94	8.22	0	0	0
10-Sep-2007	7.21	8.49	0	0	0
10-Oct-2007	7.24	8.74	0	0	0
10-Nov-2007	7.13	8.25	0	0	0
10-Dec-2007	6.72	8.26	0	0	0
10-Jan-2008	6.63	8.69	0	0	0
10-Feb-2008	6.69	8.23	0	0	0
10-Mar-2008	6.83	8.41	0	0	0
10-Apr-2008	7.20	8.22	0	0	0
10-May-2008	7.17	8.26	0	0	0
10-Jun-2008	7.13	8.64	0	0	0
10-Jul-2008	6.81	8.67	0	0	0
10-Aug-2008	6.87	8.67	0	0	0
10-Sep-2008	7.08	8.30	0	0	0
10-Oct-2008	6.69	8.21	0	0	0
10-Nov-2008	6.9	8.33	0	0	0
10-Dec-2008	6.94	8.46	0	0	0
10-Jan-2009	6.89	8.43	0	0	0
10-Feb-2009	7.09	8.26	0	0	0
10-Mar-2009	7.08	8.38	0	0	0
10-Apr-2009	6.97	8.30	0	0	0
10-May-2009	7.14	8.54	0	0	0
10-Jun-2009	6.69	8.58	0	0	0
10-Jul-2009	6.11	8.41	0	0	0
10-Aug-2009	6.40	8.62	0	0	0
10-Sep-2009	6.42	8.85	0	0	0
10-Oct-2009	6.82	8.59	0	0	0
10-Nov-2009	6.60	8.64	0	0	0
10-Dec-2009	6.60	8.94	0	0	0
10-Jan-2010	6.36	8.96	0	0	0
10-Feb-2010	7.04	8.79	0	0	0
10-Mar-2010	6.34	8.56	0	0	0
10-Apr-2010	6.64	8.29	0	0	0
Limit	6.0	9.0	446	60	60

8.667 < 90th percentile for use in WLA spreadsheet
both min & max monthly pH values used

8.22 < 10th percentile wet season pH
Jan - May

Roanoke Electric Steel Corporation
Permit No: VA0001589

Outfall No:005

DMR Due date	Copper, total recoverable (grams/day & ug/l) load avg.	load max.	conc. avg.	conc. max.	Lead, total recoverable (grams/day & ug/l) load avg.	load max.	conc. avg.	conc. max.	Zinc, total recoverable (grams/day & ug/l) load avg.	load max.	conc. avg.	conc. max.
10-Jul-2007	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL
10-Oct-2007	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL
10-Jan-2008	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL
10-Apr-2008	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL
10-Jul-2008	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL
10-Oct-2008	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL
10-Jan-2009	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL
10-Apr-2009	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL
10-Jul-2009	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL
10-Oct-2009	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL
10-Jan-2010	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL
10-Apr-2010	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL
Limit	80.8	99.4			72.9	89.6	NL	NL	340	418	NL	NL

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY
Blue Ridge Regional Office - Roanoke
Water Division

3019 Peters Creek Road **Roanoke, VA 24019**

Subject: WET Testing; Chronic - C. dubia and P. promelas, Outfall 005
Steel Dynamics Roanoke Bar Division dba Roanoke Electric Steel, Roanoke
VPDES permit VA0001589

To: Fact Sheet 2010 VPDES Permit Reissuance

From: Susan K. Edwards, Environmental Engineer Senior

Date: April 2010

Discussion:

The wastewater treatment plant is designated outfall 005 and the subject of this series of tests. During the permit term Acute WET testing at this facility is also performed on storm water samples from outfall 001.

The results of the annual WET tests of effluent collected at outfall 005 are summarized in the table below. Industrial wastewater treatment plant 24-hour flow proportioned composite effluent samples are collected in an automatic sampler for the toxicity tests. Each data package and report was audited. Submittals were determined to be valid based on the appropriate review checklist. The Chronic IWC for the facility was 12.6%. The 2005 reissuance did not require the acute testing as test sensitivity was in the chronic results.

Results during this term are **not** chronically toxic in 3 out of 4 test years, but the two tests run in 2007 show chronic sensitivity in C. dubia, fathead minnows. Discussion with the permittee provided insight into the change in results. The 2007 results prompted Steel Dynamics to consider possible causes of the bioassay toxicity. The review concluded that the age of the sand filter media as suspect in reducing the treatment works effectiveness. The media in the sand filter was replaced and subsequent testing in 2008 and 2009 indicate the changes of treatment plant media were effective with much improved bioassay results.

Recommendations:

Revise frequency of testing to **semi-annual** sampling, testing and reporting of WET at the reissuance to offer shorter time to identify possible whole effluent toxicity problems than annual testing.

Chronic Toxicity Test Results - Outfall 005

Test Date	Test Organism	NOEC % Survival/Growth	$T.U._c$	% Survival in 100% Effluent
5/06	C. dubia	100	<1.00	100
5/06	P. promelas	100	<1.00	100
5/07	C. dubia	41	2.44	10
5/07	P. promelas	100	1.0	100
6/07	C. dubia	17	5.88	0
6/07	P. promelas	100	1.0	97.5
5-6/08	C. dubia	100	1.0	100
5-6/08	P. promelas	100	1.0	97.5
9/09	C. dubia	100	1.0	100
9/09	P. promelas	100	1.0	93

Mixing Zone Predictions for Steel Dynamics Roanoke Bar Division

Effluent Flow =	0.0932 MGD
Stream 7Q10 =	0.49 MGD
Stream 30Q10 =	0.69 MGD
Stream 1Q10 =	0.47 MGD
Stream slope =	0.005 ft/ft
Stream width =	16 ft
Bottom scale =	3
Channel scale =	1

Mixing Zone Predictions @ 7Q10

Depth =	0.1853 ft
Length =	980.95 ft
Velocity =	0.3066 ft/sec
Residence Time =	0.037 days

Recommendation: A complete mix assumption is appropriate for this situation and the entire 7Q10 may be used.

Mixing Zone Predictions @ 30Q10

Depth =	0.221 ft
Length =	844.71 ft
Velocity =	0.3438 ft/sec
Residence Time =	0.0284 days

Recommendation: A complete mix assumption is appropriate for this situation and the entire 30Q10 may be used.

Mixing Zone Predictions @ 1Q10

Depth =	0.1816 ft
Length =	997.65 ft
Velocity =	0.3026 ft/sec
Residence Time =	0.9157 hours

Recommendation: A complete mix assumption is appropriate for this situation and the entire 1Q10 may be used.

Virginia DEQ Mixing Zone Analysis Version 2.1

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY
Blue Ridge Regional Office, Roanoke - Water Division

3019 Peters Creek Road Roanoke, VA 24019

Subject: Evaluation of Federal Effluent Guideline based limits, Outfall **005**
Steel Dynamics Roanoke Bar Division, Roanoke; VPDES permit VA0001589

To: VPDES Permit Fact Sheet for 2010 reissuance

From: Susan K. Edwards, Environmental Engineer Senior

The Federal Effluent Guidelines (FEG) of 40 CFR 420 Iron and Steel Manufacturing Point Source Category applies to the discharge of the Roanoke Electric Steel plant. The plant is a non-integrated steel making mill. The applicable FEGs have not changed since the last reissuance. There was a revision to some portions of this Point Source Category on Oct. 17, 2002.

The Subpart F Federal Effluent Guideline limitation multipliers have not changed from the 1999 and 2005 limit evaluation.

Subpart D - *Steelmaking* does not apply because there is no contact process wastewater discharge associated with the steel making furnace area of the facility.

Subpart F *Continuous Casting* (420.62 and .63) and Subpart G *Hot Forming Primary* mills without scarfing (420.72(a)(1)) do apply to the facility. FEG limits are based on average daily throughputs of each part of the mill, in terms of kilograms per thousand kilograms of production. There are best practicable control technology currently available (BPT) and best available technology economically achievable (BAT) limit rates that apply within Subpart F and BPT limit rates in Subpart G.

Throughputs for Subpart F - Continuous Casting have changed from the last reissuance at 1,814,360 kg/day to a daily average of 1,311,000 kg/day based on the last 5-years of operation.

The throughput for Subpart G - Hot Forming at the mill has gone from 1,178,989 kg/day at the last reissuance to 1,353,000 kg/day as a 5-year daily average.

Limit calculations:

Section 420.62 gives BPT effluent limitation rates for Subpart F:

	Limitation multiplier (kg/kkg)		Effluent limit (kg/day)	
	Daily	Monthly	Daily	Monthly
Parameter	Max.	Average	Max.	Average
TSS	0.078	0.026	102.2	34.09
Oil & Grease	0.0234	0.0078	30.7	10.2
pH	6.0 – 9.0 (S.U.)		6.0 – 9.0 (S.U.)	

Section 420.63 gives BAT effluent limitation rates for Subpart F:

	Limitation multiplier (kg/kkg)		Effluent limit (kg/day)	
	Daily	Monthly	Daily	Monthly
Parameter	Max.	Average	Max.	Average
Lead	0.0000939	0.0000313	0.123	0.041
Zinc	0.000141	0.0000469	0.185	0.061

Section 420.72(a)(1) gives BPT effluent limitation rates for Subpart G *Hot Forming* at primary mills without scarfing:

	Limitation multiplier (kg/kkg)		Effluent limit (kg/day)	
	Daily	Monthly	Daily	Monthly
Parameter	Max.	Average	Max.	Average
TSS	0.15	0.0561	203.0	66.14
Oil & Grease	0.0374	0.0125*	50.6	18.9
pH	6.0 – 9.0 (S.U.)		6.0 – 9.0 (S.U.)	

* Monthly average multiplier calculated from daily max using daily max. to monthly average ratio of TSS.

The limitations that are calculated above are added for the total FEG based limits for the plant's wastewater effluent:

	Effluent limit (kg/day)	
	Daily	Monthly
Parameter	Max.	Average
TSS	305.2	110.0
Oil & Grease	81.3	29.2
pH	6.0 – 9.0 (S.U.)	
Lead*	0.123	0.041
Zinc*	0.185	0.0615

* Lead and zinc are total recoverable limitations

The lead and zinc FEG load limits are then converted to concentrations for the permit as a better indication of on-going treatment plant performance using the highest monthly average discharge by the treatment plant in the last 3-year period, 0.0932 MGD:

	Effluent limit (mg/L)	
	Daily	Monthly
Parameter	Max.	Average
Lead*	0.349	0.116
Zinc*	0.524	0.174

* Lead and zinc are total recoverable limitations

Title 40: Protection of Environment

PART 420 - IRON AND STEEL MANUFACTURING POINT SOURCE CATEGORY

Subpart D - Steelmaking Subcategory

§ 420.40 Applicability; description of the steelmaking subcategory.

The provisions of this subpart are applicable to discharges and to the introduction of pollutants into publicly owned treatment works resulting from steelmaking operations conducted in basic oxygen and electric arc furnaces.

§ 420.41 Specialized definitions.

(a) The term *basic oxygen furnace steelmaking* means the production of steel from molten iron, steel scrap, fluxes, and various combinations thereof, in refractory lined furnaces by adding oxygen.

(b) [Reserved]

(c) The term *electric arc furnace steelmaking* means the production of steel principally from steel scrap and fluxes in refractory lined furnaces by passing an electric current through the scrap or steel bath.

(d) The term *wet* means those steelmaking air cleaning systems that primarily use water for furnace gas cleaning.

(e) The term *semi-wet* means those steelmaking air cleaning systems that use water for the sole purpose of conditioning the temperature and humidity of furnace gases such that the gases may be cleaned in dry air pollution control systems.

(f) The term *open combustion* means those basic oxygen furnace steelmaking wet air cleaning systems which are designed to allow excess air to enter the air pollution control system for the purpose of combusting the carbon monoxide in furnace gases.

(g) The term *suppressed combustion* means those basic oxygen furnace steelmaking wet air cleaning systems which are designed to limit or suppress the combustion of carbon monoxide in furnace gases by restricting the amount of excess air entering the air pollution control system.

Subpart F - Continuous Casting Subcategory

§ 420.60 Applicability; description of the continuous casting subcategory.

The provisions of this subpart are applicable to discharges and to the introduction of pollutants into publicly owned treatment works resulting from the continous casting of molten steel into intermediate or semi-finished steel products through water cooled molds.

§ 420.62 Effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available (BPT).

Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.

Subpart F

Pollutant or pollutant property	BPT effluent limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days
	Kg/kkg (pounds per 1,000 lb) of product	
TSS	0.0780	0.0260
Oil & Grease	0.0234	0.0078
pH	([1])	([1])

[1]Within the range of 6.0 to 9.0.

§ 420.63 Effluent limitations representing the degree of effluent reduction attainable by the application of the best available technology economically achievable (BAT).

Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best available technology economically achievable.

Subpart F

Pollutant or pollutant property	BAT effluent limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days
	Kg/kkg (pounds per 1,000 lb) of product	
Lead	0.0000939	0.0000313
Zinc	0.000141	0.0000469

Subpart G - Hot Forming Subcategory

§ 420.70 Applicability; description of the hot forming subcategory.

The provisions of this subpart are applicable to discharges and to the introduction of pollutants into publicly owned treatment works resulting from hot forming operations conducted in primary, section, flat, and pipe and tube mills.

§ 420.71 Specialized definitions.

(a) The term *hot forming* means those steel operations in which solidified, heated steel is shaped by rolls.

(b) The term *primary mill* means those steel hot forming operations that reduce ingots to blooms or slabs by passing the ingots between rotating steel rolls. The first hot forming operation performed on solidified steel after it is removed from the ingot molds is carried out on a "primary mill".

(c) The term *section mill* means those steel hot forming operations that produce a variety of finished and semi-finished steel products other than the products of those mills specified below in paragraphs (d), (e), (g), and (h) of this section.

(d) The term *flat mill* means those steel hot forming operations that reduce heated slabs to plates, strip and sheet, or skelp.

(e) The term *pipe and tube mill* means those steel hot forming operations that produce butt welded or seamless tubular steel products.

(f) The term *scarfing* means those steel surface conditioning operations in which flames generated by the combustion of oxygen and fuel are used to remove surface metal imperfections from slabs, billets, or blooms.

(g) The term *plate mill* means those steel hot forming operations that produce flat hot-rolled products which are (1) between 8 and 48 inches wide and over 0.23 inches thick; or (2) greater than 48 inches wide and over 0.18 inches thick.

(h) The term *hot strip and sheet mill* means those steel hot forming operations that produce flat hot-rolled products other than plates.

(i) The term *specialty steel* means those steel products containing alloying elements which are added to enhance the properties of the steel product when individual alloying elements (e.g., aluminum, chromium, cobalt, columbium, molybdenum, nickel, titanium, tungsten, vanadium, zirconium) exceed 3% or the total of all alloying elements exceed 5%.

(j) The term *carbon steel* means those steel products other than specialty steel products.

(k) The term *carbon hot forming operation* (or "carbon") means those hot forming operations which produce a majority, on a tonnage basis, of carbon steel products.

(l) The term *specialty hot forming operation* (or "specialty") applies to all hot forming operations other than "carbon hot forming operations."

§ 420.72 Effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available (BPT).

Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this subpart must achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.

(a) *Primary mills, carbon and specialty* —(1) *Without scarfing.*

Subpart G

Pollutant or pollutant property	BPT effluent limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days
	Kg/kkg (pounds per 1,000 lb) of product	
TSS	0.150	0.0561
O&G	0.0374	
pH	(1)	(1)

[1]Within the range of 6.0 to 9.0.

§ 420.73 Effluent limitations representing the degree of effluent reduction attainable by the application of the best available technology economically achievable (BAT).

The Agency has determined that there are not significant quantities of toxic pollutants in hot forming wastewaters after compliance with applicable BPT limitations. Accordingly, since the BPT level of treatment provides adequate control, the Agency is not promulgating more stringent BAT limitations.

Roanoke Electric Steel Corp. **VA00001589**
Federal Effluent Guideline based limit calculations
2010 reissuance

				FEG Effluent Limits		
Subpart F - Continuous Casting						
Throughput	1,311,000	kg/day				
	daily max	monthly avg		daily max	monthly avg	
TSS	0.078	0.026	(kg/kkg)	102.258	34.086	(kg/day)
Oil & Grease	0.0234	0.0078	(kg/kkg)	30.677	10.226	(kg/day)
pH (S.U.)	6.0 - 9.0			6.0 - 9.0		
Lead	0.0000939	0.0000313	(kg/kkg)	0.1231	0.0410	(kg/day)
Zinc	0.000141	0.0000469	(kg/kkg)	0.1849	0.0615	(kg/day)

Subpart G - Hot Forming						
Throughput	1,353,000	kg/day				
	daily max	monthly avg		daily max	monthly avg	
TSS	0.15	0.0561	(kg/kkg)	202.950	75.903	(kg/day)
Oil & Grease	0.0374	0.0139876	(kg/kkg)	50.602	18.925	(kg/day)
pH	6.0 - 9.0			6.0 - 9.0		

* monthly avg. oil & grease BPT multiplier based on ratio daily max to monthly avg of TSS

Combined Effluent Limitations	daily max	monthly avg	
TSS	305.2	110.0	(kg/day)
Oil & Grease	81.3	29.2	(kg/day)
pH (S.U.)	6.0 - 9.0		
Lead	0.1231	0.0410	(kg/day)
Zinc	0.1849	0.0615	(kg/day)

Convert load to concentration at design flow of treatment plant						
Design flow	0.1 (MGD)			0.0932 (MGD)		
	daily max	monthly avg		daily max	monthly avg	
Lead load	0.1231	0.0410	(kg/day)	0.1231	0.0410	(kg/day)
Zinc load	0.1849	0.0615	(kg/day)	0.1849	0.0615	(kg/day)
Lead conc.	0.325	0.108	(mg/l)	0.349	0.116	(mg/l)
Zinc conc.	0.488	0.162	(mg/l)	0.524	0.174	(mg/l)

VPDES Permit VA0001589
Steel Dynamics, Roanoke Bar Division
Reissuance 2011

ATTACHMENT C

1. Anti-degradation wasteload allocation spreadsheet from 1999 reissuance updated with 2010 stream flows, effluent and receiving stream water quality data - AWLA99update2010

2. STATS.exe statistics evaluation output file using acute & chronic AWLA99update2010 wasteload allocations and concentrations calculated from FEG load limits at treatment plant 30-day maximum flow – Lead and Zinc

3. STATS.exe statistics evaluation output file using acute & chronic AWLA99update2010 wasteload allocations to update limits for total residual chlorine, copper, lead and zinc

4. 2010 MSTRANTI spreadsheet – 2010 anti-degradation wasteload allocation spreadsheet with current stream and effluent flows and water quality parameters

5. STATS.exe output files for limit evaluation of nickel

WLA Analysis For: Steel Dynamics Roanoke Bar [ANTIDEGRADATION Date: 04/20/10

Spreadsheet for Chronic and Human Health AWLAs

Stream:	Peters Creek	Effluent Information		Hardness:		
Mean Hardness (mg/L) =	153.45	Mean Hardness=	335	acute	183	Mix Hardness= acute 183
Stream NH3 (mg/L)	0	NH3 (mg/L)=		chronic	182	chronic 182
90% Temperature	23.07	90% Temp.=	29.65	7Q10 Ratio	6.30	* WLAa
90% pH	8.67	90% pH=	8.667	1Q10 Ratio	6.10	Coefficient = 0.328
Fractional 7Q10-MGD	0.494	100% of 7Q10 Flow, MGD=	0.0932			Acute IWC = 0.164
Fractional 1Q10-MGD	0.475	100% of 1Q10		Harmonic ratio:	27.50	Chronic IWC = 0.159
Harmonic mean (carcinogen):	2.47			30Q5 ratio:	9.49	
30Q5 Flow (Non-carcinogen):	0.791					
R(iver),L(ake) or S(torm):	R					
Trout Present? (Y/N)	n					
Public Water Supply(Y/N):	n					

NOTE: 90th percentile pH and temperature for effluent based on DMR reported daily maximums. Hardness data from 005 WET reports

			Aquatic Protection Freshwater Criteria				Human Health								
Parameter and Form	Carcinogen?	Sort? (Y/N)	Acute Criteria	Existing Quality at 1Q10	Chronic Criteria	Existing Quality at 7Q10	All Other Surface Water Criteria	Existing Quality for HH	Back-ground concentration	Acute Baseline	Chronic Baseline	Human Health Baseline	Acute AWLA	Chronic A WLA	Human Health A WLA
Ammonia (mg/l as N)		Y	1.423	0.062	0.324	0.058	None		0.00	0.402	0.125	0.00	2.45	0.78	N/A
Arsenic		Y	None		None		50		0.00	0.000	0.000	5.00	N/A	N/A	47.44
Cadmium		Y	7.77		1.82		None		0.00	1.941	0.454	0.00	11.84	2.86	N/A
Chlorine		Y	19	11.60	11	10.90	None		0.00	13.450	10.925	0.00	82.00	68.83	N/A
Chloroform	C	Y	None		None		47000		0.00	0.000	0.000	4700.00	N/A	N/A	129260.09
Copper		Y	31.36	7.93	19.75	7.49	None		0.87	13.788	10.555	0.00	79.62	61.89	N/A
Cr III		Y	2851.48		338.42		None		0.00	712.870	84.604	0.00	4346.06	533.04	N/A
Cr-hex		Y	16		11		None		0.00	4.000	2.750	0.00	24.39	17.33	N/A
Lead		Y	257.05	1.85	29.01	1.78	None		0.77	65.650	8.587	0.00	396.31	50.02	N/A
Mercury		Y	2.4		0.012		0.053		0.00	0.600	0.0030	0.01	3.66	0.02	0.05
Nickel		Y	304.99		33.78		4600		0.00	76.248	8.445	460.00	464.85	53.20	4364.08
Selenium		Y	20		5		11000		0.00	5.000	1.250	1100.00	30.48	7.88	10435.84
Silver		Y	11.50		None		None		N/A	2.875	0.000	0.00	17.53	N/A	N/A
Xylenes, Total		Y	740		74				N/A	185.000	18.500	0.00	1127.86	116.56	N/A
Zinc		Y	195.48	11.78	176.27	11.19	None		2.32	57.705	52.459	0.00	340.00	318.24	N/A
1,1-dichloroethylene		n	None		None		17000		N/A	0.000	0.000	1700.00	N/A	N/A	46753.65
1,2-dichlorobenzene		n	None		None		17000		N/A	0.000	0.000	1700.00	N/A	N/A	16128.11
1,2-dichloroethane	C	n	None		None		990		N/A	0.000	0.000	99.00	N/A	N/A	2722.71
1,2,4-trichlorobenzene		n	None		None		950		N/A	0.000	0.000	95.00	N/A	N/A	2612.70
1,3-dichlorobenzene		n	None		None		2600		N/A	0.000	0.000	260.00	N/A	N/A	2466.65
1,4-dichlorobenzene		n	None		None		2600		N/A	0.000	0.000	260.00	N/A	N/A	2466.65
2-Chlorophenol		n	None		None		400		N/A	0.000	0.000	40.00	N/A	N/A	1100.09
2,4-dichlorophenol		n	None		None		790		N/A	0.000	0.000	79.00	N/A	N/A	2172.67
2,4-dichlorophenoxy acetic acid		n	None		None		None		N/A	0.000	0.000	0.00	N/A	N/A	N/A
2,4-dimethylphenol		n	None		None		2300		N/A	0.000	0.000	230.00	N/A	N/A	6325.49
2,4-dinitrotoluene	C	n	None		None		91		N/A	0.000	0.000	9.10	N/A	N/A	250.27
2,4,6-Trichlorophenol	C	n	None		None		65		N/A	0.000	0.000	6.50	N/A	N/A	178.76
Acenaphthene		n	None		None		2700		N/A	0.000	0.000	270.00	N/A	N/A	7425.58
Aldrin	C	n	3		0.3		0.0014		N/A	0.750	0.075	0.00	4.57	0.47	0.00
Anthracene		n	None		None		110000		N/A	0.000	0.000	11000.00	N/A	N/A	104358.37
Antimony		n	None		None		4300		N/A	0.000	0.000	430.00	N/A	N/A	11825.92
Arsenic-3		n	360		190		None		N/A	90.000	47.500	0.00	548.69	299.27	N/A
Barium		n	None		None		None		N/A	0.000	0.000	0.00	N/A	N/A	N/A
Benzene	C	n	530		53		710		N/A	132.500	13.250	71.00	807.80	83.48	1952.65
Benzo(a)anthracene	C	n	None		None		0.049		N/A	0.000	0.000	0.0049	N/A	N/A	0.13
Benzo(a)pyrene	C	n	None		None		0.049		N/A	0.000	0.000	0.0049	N/A	N/A	0.13
Benzo(b)fluoranthene	C	n	None		None		0.049		N/A	0.000	0.000	0.0049	N/A	N/A	0.13
Benzo(k)fluoranthene	C	n	None		None		0.049		N/A	0.000	0.000	0.0049	N/A	N/A	0.13
Bromoform	C	n	None		None		3600		N/A	0.000	0.000	360.00	N/A	N/A	9900.77
Butyl benzyl phthalate		n	None		None		5200		N/A	0.000	0.000	520.00	N/A	N/A	14301.12
Carbon Tetrachloride	C	n	None		None		45		N/A	0.000	0.000	4.50	N/A	N/A	123.76
Chlordane	C	n	2.4		0.0043		0.0059		N/A	0.600	0.001	0.00	3.66	0.01	0.02
Chloride		n	860000		230000		None		N/A	215000.000	57500.000	0.00	1310761.80	362274.68	N/A
Chlorodibromomethane		n	None		None		57000		N/A	0.000	0.000	5700.00	N/A	N/A	54076.61
Chlorpyrifos		n	0.083		0.041		None		N/A	0.021	0.010	0.00	0.13	0.06	N/A
Chrysene	C	n	None		None		0.049		N/A	0.000	0.000	0.0049	N/A	N/A	0.13
Cyanide		n	22		5.2		215000		N/A	5.500	1.300	21500.00	33.53	8.19	203973.18

2010 AWLA - 1999 spreadsheet updated with 2010 flows

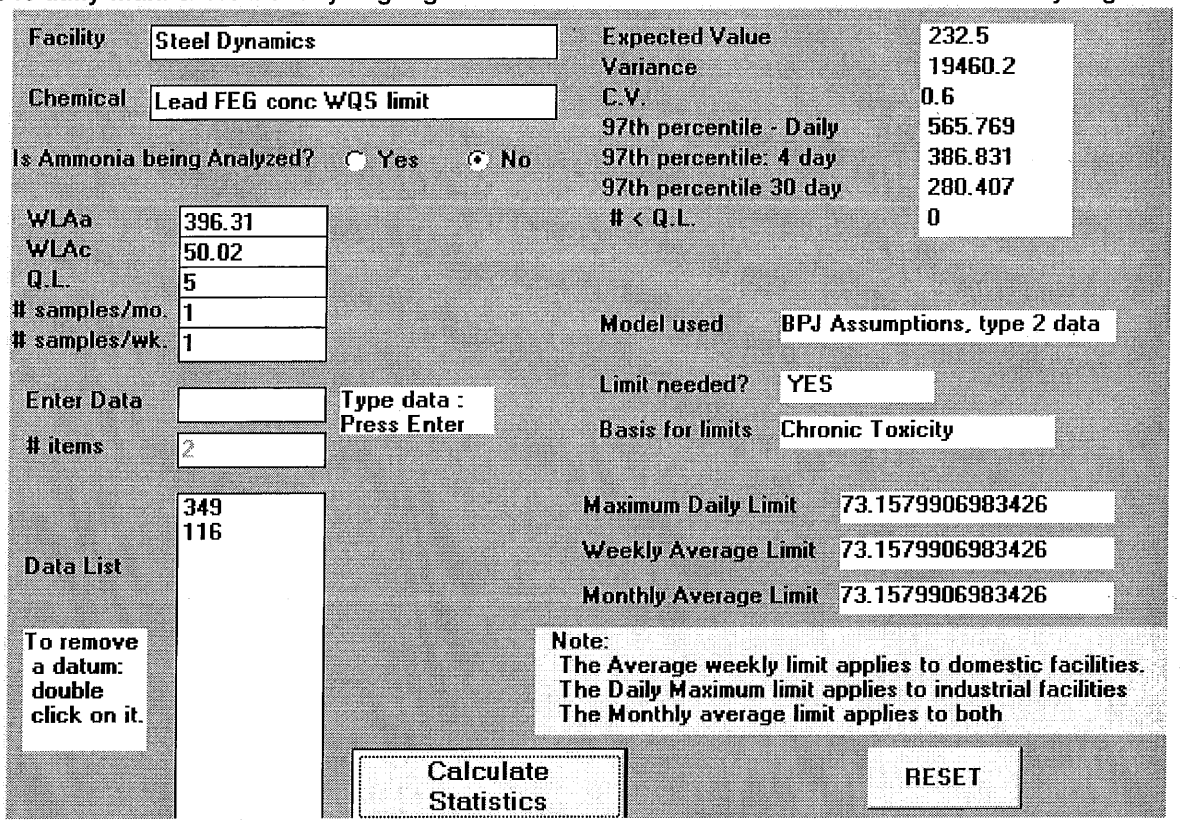
DDD	C	n	None	None	0.0084	N/A	0.000	0.000	0.0008	N/A	N/A	0.01
DDE	C	n	None	None	0.0059	N/A	0.000	0.000	0.0006	N/A	N/A	0.01
DDT	C	n	1.1	0.001	0.0059	N/A	0.275	0.000	0.0006	1.68	0.00	0.02
Demeton		n	None	0.1	None	N/A	0.000	0.025	0.0000	N/A	0.16	N/A
Di-2-ethylhexyl Phthalate	C	n	None	None	59	N/A	0.000	0.000	5.9000	N/A	N/A	162.26
Dibenz(a,h)anthracene	C	n	None	None	0.049	N/A	0.000	0.000	0.0049	N/A	N/A	0.13
Dibutyl phthalate		n	None	None	12000	N/A	0.000	0.000	1200.00	N/A	N/A	33002.58
Dichlorobromomethane	C	n	None	None	460	N/A	0.000	0.000	46.00	N/A	N/A	1265.10
Dichloromethane	C	n	None	None	16000	N/A	0.000	0.000	1600.00	N/A	N/A	44003.43
Dieldrin		n	2.5	0.0019	0.00014	N/A	0.625	0.000	0.00	3.81	0.00	0.00
Diethyl phthalate		n	None	None	120000	N/A	0.000	0.000	12000.00	N/A	N/A	330025.75
Dioxin		n	None	None	None	N/A	0.000	0.000	0.00	N/A	N/A	N/A
Dissolved Oxygen		n	4	5	None	N/A	1.000	1.250	0.00	6.10	7.88	N/A
Endosulfan		n	0.22	0.056	240	N/A	0.055	0.014	24.00	0.34	0.09	227.69
Endrin		n	0.18	0.0023	0.81	N/A	0.045	0.001	0.08	0.27	0.00	0.77
Ethylbenzene		n	3200	320	29000	N/A	800.000	80.000	2900.00	4877.25	504.03	27512.66
Fluoranthene		n	None	None	370	N/A	0.000	0.000	37.00	N/A	N/A	351.02
Fluorene		n	None	None	14000	N/A	0.000	0.000	1400.00	N/A	N/A	13281.97
Foaming Agents (MBAS)		n	None	None	None	N/A	0.000	0.000	0.00	N/A	N/A	N/A
Guthion		n	None	0.01	None	N/A	0.000	0.003	0.00	N/A	0.02	N/A
Heptachlor	C	n	0.52	0.0038	0.0021	N/A	0.130	0.001	0.0002	0.79	0.01	0.01
Hexachlorocyclohexane		n	2	0.08	25	N/A	0.500	0.020	2.50	3.05	0.13	68.76
Hydrogen Sulfide		n	None	2	None	N/A	0.000	0.500	0.00	N/A	3.15	N/A
Indeno(1,2,3-cd)pyrene	C	n	None	None	0.049	N/A	0.000	0.000	0.0049	N/A	N/A	0.13
Iron		n	None	None	None	N/A	0.000	0.000	0.0000	N/A	N/A	N/A
Isophorone		n	None	None	490000	N/A	0.000	0.000	49000.00	N/A	N/A	464869.10
Kepone		n	None	None	None	N/A	0.000	0.000	0.00	N/A	N/A	N/A
Lindane		n	2	0.08	25	N/A	0.500	0.020	2.50	3.05	0.13	23.72
Malathion		n	None	0.1	None	N/A	0.000	0.025	0.00	N/A	0.16	N/A
Manganese		n	None	None	None	N/A	0.000	0.000	0.00	N/A	N/A	N/A
Methoxychlor		n	None	0.03	None	N/A	0.000	0.008	0.00	N/A	0.05	N/A
Mirex		n	None	None	None	N/A	0.000	0.000	0.00	N/A	N/A	N/A
Monochlorobenzene		n	None	None	21000	N/A	0.000	0.000	2100.00	N/A	N/A	19922.96
Nitrate(as N)		n	None	None	None	N/A	0.000	0.000	0.00	N/A	N/A	N/A
Nitrobenzene		n	None	None	1900	N/A	0.000	0.000	190.00	N/A	N/A	5225.41
Parathion		n	0.065	0.013	None	N/A	0.016	0.003	0.00	0.10	0.02	N/A
PCBs(7 species)	C	n	None	None	0.00045	N/A	0.000	0.000	0.00	N/A	N/A	0.00
Pentachlorophenol		n	0.07	0.04	82	N/A	0.017	0.011	8.20	0.11	0.07	77.79
pH		n	None	None	None	N/A	0.000	0.000	0.00	N/A	N/A	N/A
Phenol		n	None	None	4600000	N/A	0.000	0.000	460000.00	N/A	N/A	4364077.25
Phosphorus(elemental)		n	None	None	None	N/A	0.000	0.000	0.00	N/A	N/A	N/A
Pyrene		n	None	None	11000	N/A	0.000	0.000	1100.00	N/A	N/A	10435.84
Radioactivity		n	None	None	None	N/A	0.000	0.000	0.00	N/A	N/A	N/A
Silvex		n	None	None	None	N/A	0.000	0.000	0.00	N/A	N/A	N/A
Sulfate		n	None	None	None	N/A	0.000	0.000	0.00	N/A	N/A	N/A
Temperature		n	31	31	None	N/A	31.000	31.000	0.00	188.99	195.31	N/A
Tetrachloroethylene		n	None	None	3500	N/A	0.000	0.000	350.00	N/A	N/A	3320.49
Toluene		n	1750	175	200000	N/A	437.500	43.750	20000.00	2667.25	275.64	189742.49
Total dissolved solids		n	None	None	None	N/A	0.000	0.000	0.00	N/A	N/A	N/A
Toxaphene	C	n	0.73	0.0002	0.0075	N/A	0.183	0.000	0.00	1.11	0.00	0.02
Tributyltin		n	0.46	0.026	None	N/A	0.115	0.007	0.00	0.70	0.04	N/A
Trichloroethylene	C	n	None	None	810	N/A	0.000	0.000	81.00	N/A	N/A	2227.67
Vinyl Chloride		n	None	None	5300	N/A	0.000	0.000	530.00	N/A	N/A	14576.14

Footnotes:

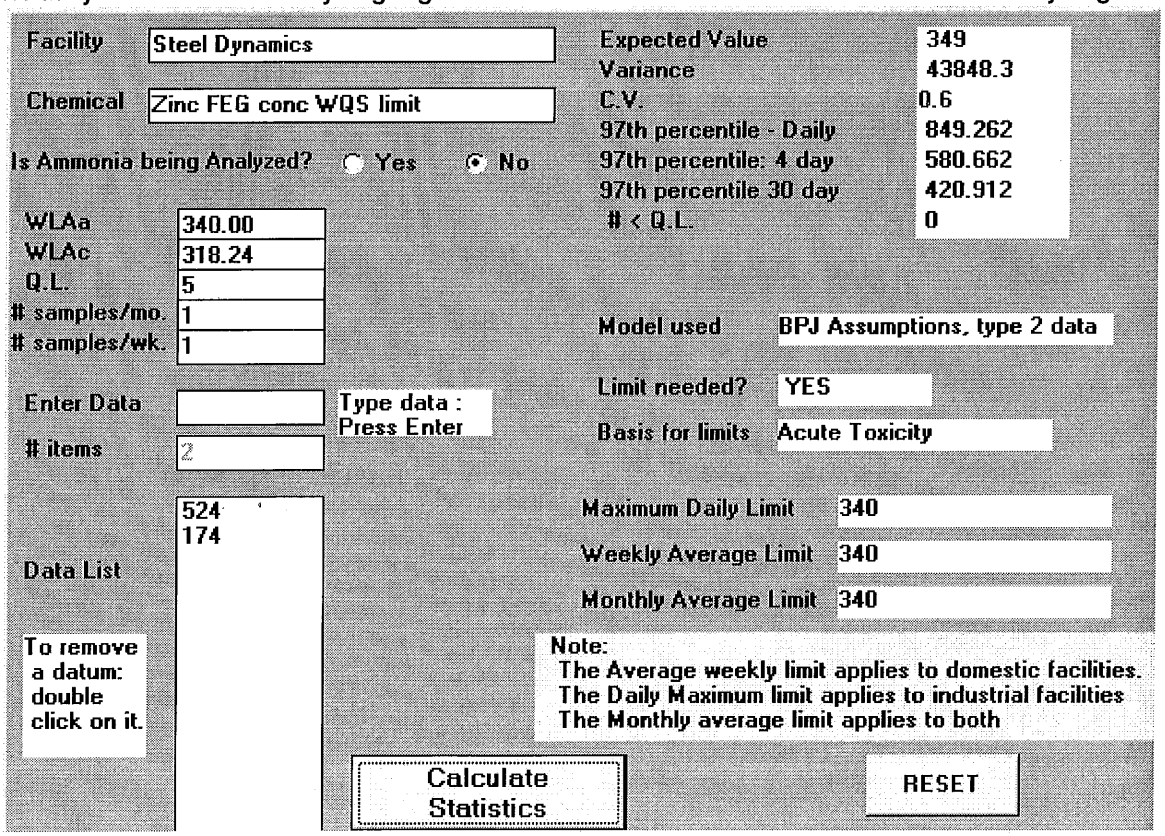
1. All concentrations expressed as micrograms per liter (ug/L),except Ammonia.
2. Ammonia (as mg/L) selected from separate tables,based on pH and temprature.
3. Acute-1 hour avg. concentration not to be exceeded more than 1/3years
4. Chronic-4 day avg.concentration not to be exceeded more than 1/3years.
5. Complete mix-mass balances employ 30Q5 for Non-carcinogens, and Harmonic Mean for Carcinogens
6. All flow values are expressed as Million Gallons per Day.
8. Metals measured as Dissolved, unless specified otherwise.
9. (c)-indicates carcinogenic parameter.
10. Public Water Supply-protects for fish and water consumption.
11. Other Waters-protects for fish consumption only.
12. Hardness expressed as CaCO3 (mg/L).
13. All limitations are based on EPA's TSD Statistical approach.

STATS.exe Evaluation of FEG load based Lead & Zinc Concentrations

[349 daily max. & 116 monthly avg. ug/L conc. from FEG load at 0.0932 MGD max. monthly avg. flow]

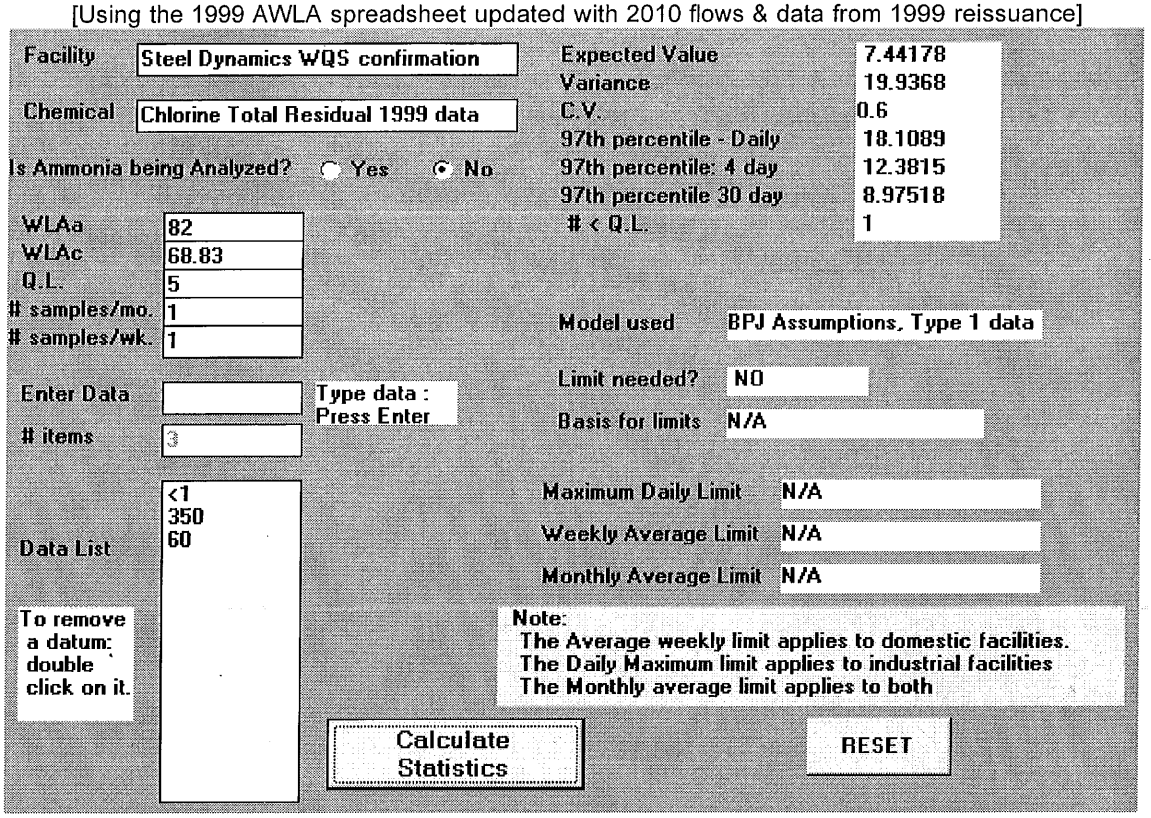


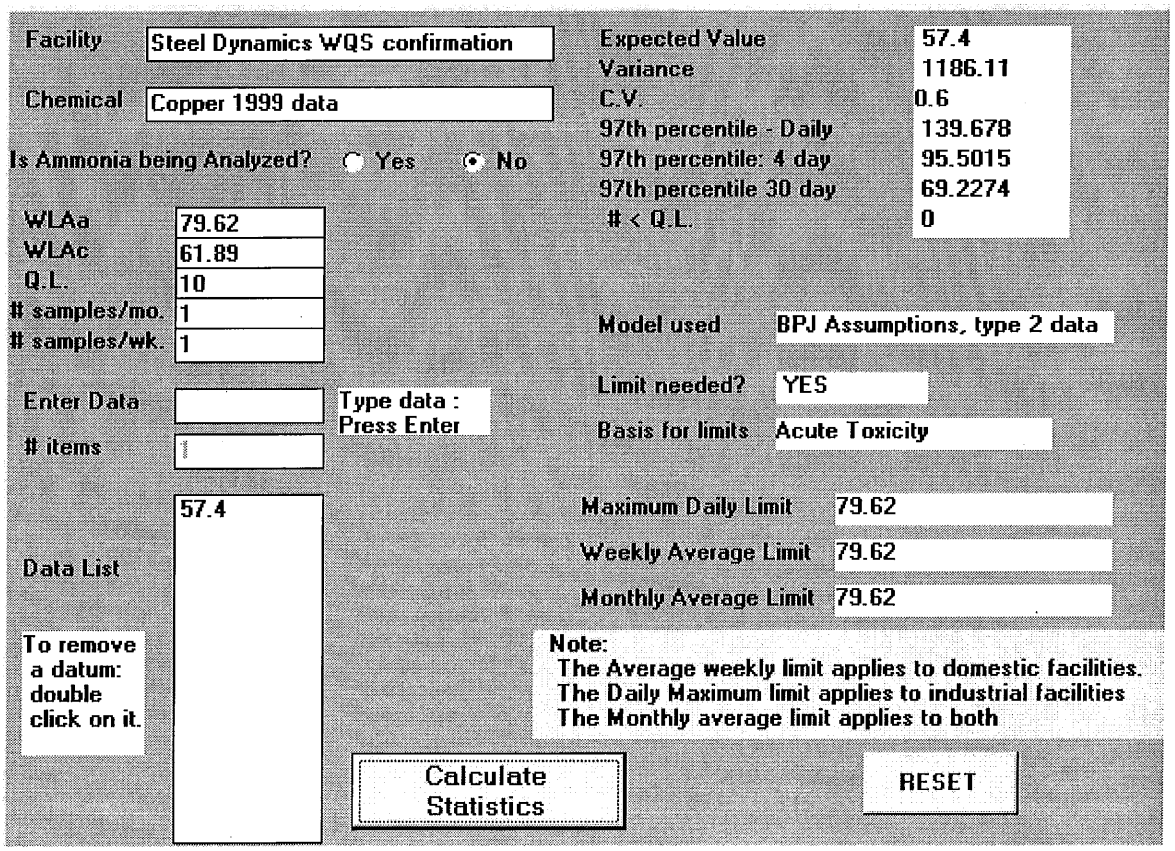
[524 daily max. & 174 monthly avg. ug/L conc. from FEG load at 0.0932 MGD max. monthly avg. flow]



Water Quality Standards Limit Confirmation TRC & Copper

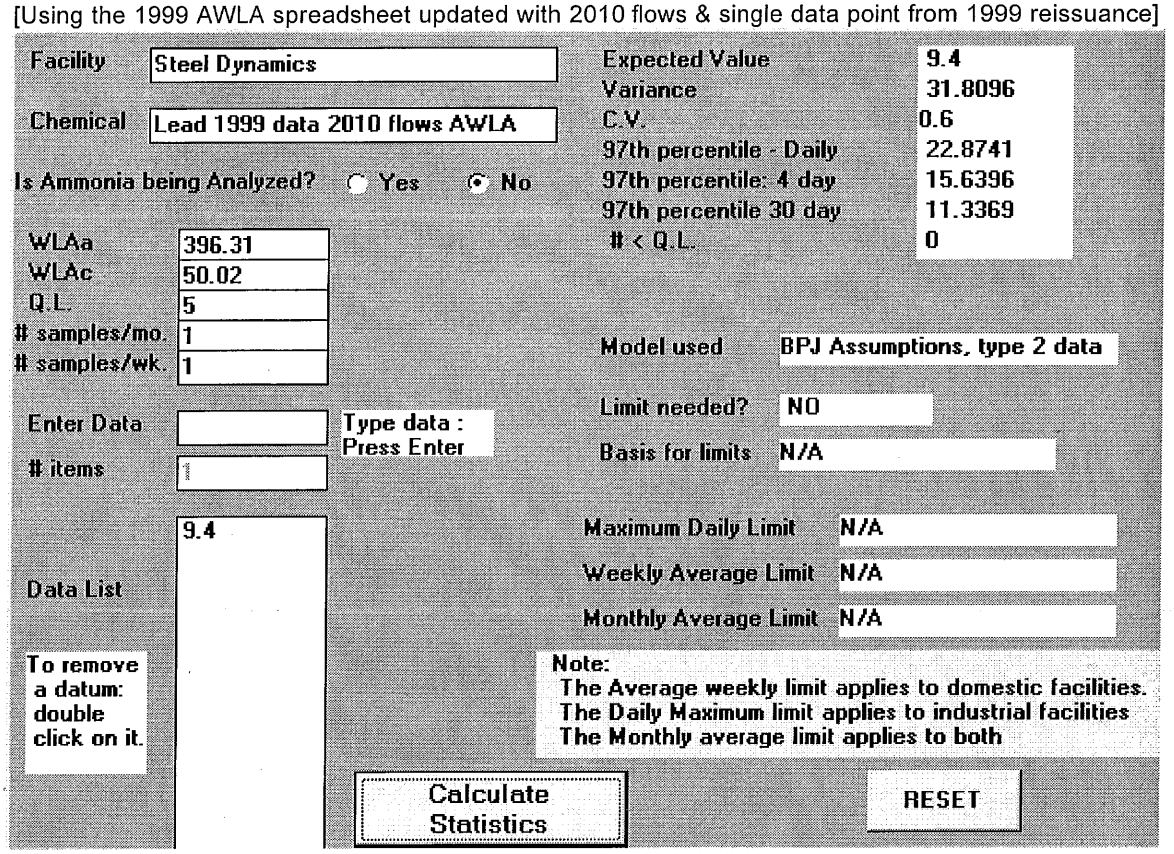
[Using the 1999 AWLA spreadsheet updated with 2010 flows & data from 1999 reissuance]

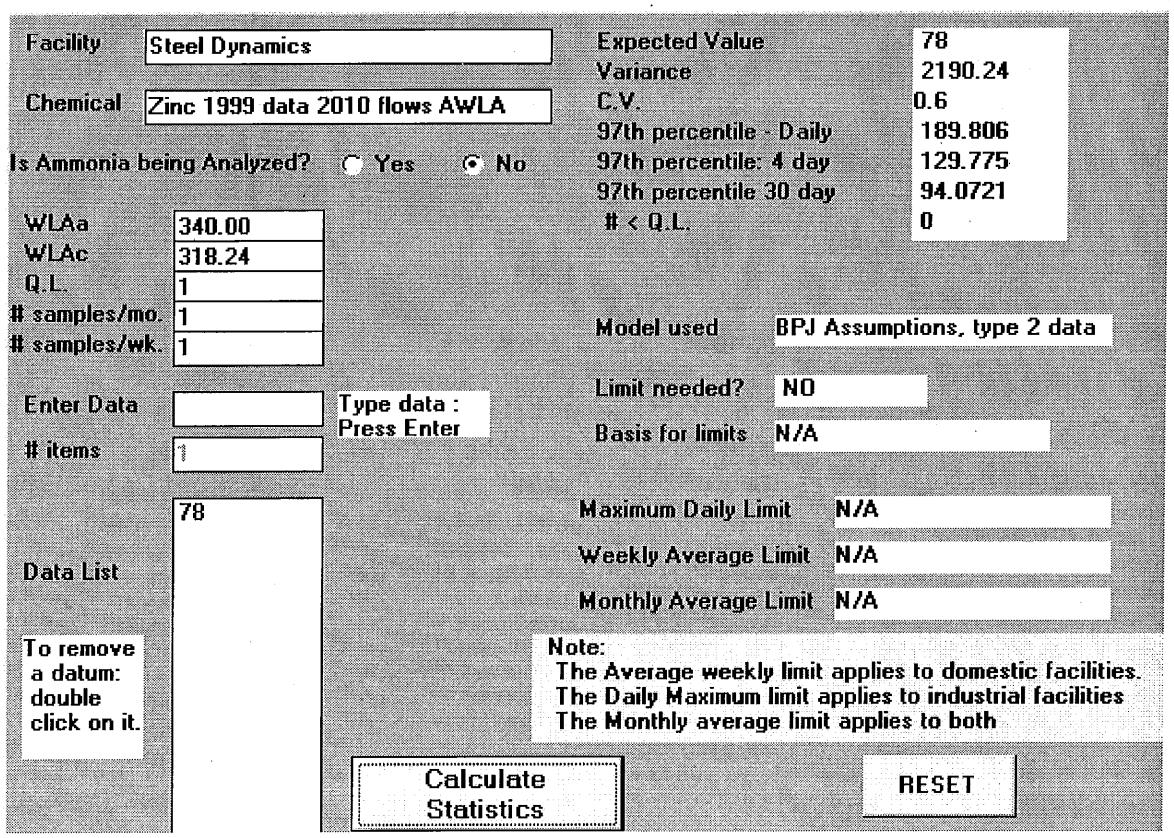




Water Quality Standards Limit Confirmation Lead & Zinc

[Using the 1999 AWLA spreadsheet updated with 2010 flows & single data point from 1999 reissuance]





FRESHWATER
WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: Steel Dynamics Roanoke Bar Division Permit No.: VA0001589

Receiving Stream: Peters Creek Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information

Mean Hardness (as CaCO3) =	153	mg/L
90% Temperature (Annual) =	23.07	deg C
90% Temperature (Wet season) =	19.36	deg C
90% Maximum pH =	8.67	SU
10% Maximum pH =	7.52	SU
Tier Designation (1 or 2) =	2	
Public Water Supply (PWS) Y/N? =	n	
Trout Present Y/N? =	n	
Early Life Stages Present Y/N? =	y	

Stream Flows

1Q10 (Annual) =	0.47	MGD
7Q10 (Annual) =	0.49	MGD
30Q10 (Annual) =	0.69	MGD
1Q10 (Wet season) =	1.13	MGD
30Q10 (Wet season)	2.45	MGD
30Q5 =	0.79	MGD
Harmonic Mean =	2.47	MGD

Mixing Information

Annual - 1Q10 Mix =	100	%
- 7Q10 Mix =	100	%
- 30Q10 Mix =	100	%
Wet Season - 1Q10 Mix =	100	%
- 30Q10 Mix =	100	%

Effluent Information

Mean Hardness (as CaCO3) =	335	mg/L
90% Temp (Annual) =	29.65	deg C
90% Temp (Wet season) =	29.65	deg C
90% Maximum pH =	8.667	SU
10% Maximum pH =	8.22	SU
Discharge Flow =	0.0932	MGD

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Acenapthene	0	--	--	na	9.9E+02	--	--	na	9.4E+03	--	--	na	9.9E+01	--	--	na	9.4E+02	--	--	na	9.4E+02
Acrolein	0	--	--	na	9.3E+00	--	--	na	8.8E+01	--	--	na	9.3E-01	--	--	na	8.8E+00	--	--	na	8.8E+00
Acrylonitrile [c]	0	--	--	na	2.5E+00	--	--	na	6.9E+01	--	--	na	2.5E-01	--	--	na	6.9E+00	--	--	na	6.9E+00
Aldrin [c]	0	3.0E+00	--	na	5.0E-04	1.8E+01	--	na	1.4E-02	7.5E-01	--	na	5.0E-05	4.5E+00	--	na	1.4E-03	4.5E+00	--	na	1.4E-03
Ammonia-N (mg/l) (Yearly)	0	2.33E+00	4.48E-01	na	--	1.4E+01	3.8E+00	na	--	5.83E-01	1.12E-01	na	--	3.5E+00	9.4E-01	na	--	3.5E+00	9.4E-01	na	--
Ammonia-N (mg/l) (High Flow)	0	2.33E+00	5.84E-01	na	--	3.1E+01	1.6E+01	na	--	5.82E-01	1.46E-01	na	--	7.6E+00	4.0E+00	na	--	7.6E+00	4.0E+00	na	--
Anthracene	0	--	--	na	4.0E+04	--	--	na	3.8E+05	--	--	na	4.0E+03	--	--	na	3.8E+04	--	--	na	3.8E+04
Antimony	0	--	--	na	6.4E+02	--	--	na	6.1E+03	--	--	na	6.4E+01	--	--	na	6.1E+02	--	--	na	6.1E+02
Arsenic	0	3.4E+02	1.5E+02	na	--	2.1E+03	9.4E+02	na	--	8.5E+01	3.8E+01	na	--	5.1E+02	2.3E+02	na	--	5.1E+02	2.3E+02	na	--
Barium	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Benzene [c]	0	--	--	na	5.1E+02	--	--	na	1.4E+04	--	--	na	5.1E+01	--	--	na	1.4E+03	--	--	na	1.4E+03
Benzidine [c]	0	--	--	na	2.0E-03	--	--	na	5.5E-02	--	--	na	2.0E-04	--	--	na	5.5E-03	--	--	na	5.5E-03
Benzo (a) anthracene [c]	0	--	--	na	1.8E-01	--	--	na	5.0E+00	--	--	na	1.8E-02	--	--	na	5.0E-01	--	--	na	5.0E-01
Benzo (b) fluoranthene [c]	0	--	--	na	1.8E-01	--	--	na	5.0E+00	--	--	na	1.8E-02	--	--	na	5.0E-01	--	--	na	5.0E-01
Benzo (k) fluoranthene [c]	0	--	--	na	1.8E-01	--	--	na	5.0E+00	--	--	na	1.8E-02	--	--	na	5.0E-01	--	--	na	5.0E-01
Benzo (a) pyrene [c]	0	--	--	na	1.8E-01	--	--	na	5.0E+00	--	--	na	1.8E-02	--	--	na	5.0E-01	--	--	na	5.0E-01
Bis2-Chloroethyl Ether [c]	0	--	--	na	5.3E+00	--	--	na	1.5E+02	--	--	na	5.3E-01	--	--	na	1.5E+01	--	--	na	1.5E+01
Bis2-Chloroisopropyl Ether	0	--	--	na	6.5E+04	--	--	na	6.2E+05	--	--	na	6.5E+03	--	--	na	6.2E+04	--	--	na	6.2E+04
Bis 2-Ethylhexyl Phthalate [c]	0	--	--	na	2.2E+01	--	--	na	6.1E+02	--	--	na	2.2E+00	--	--	na	6.1E+01	--	--	na	6.1E+01
Bromoform [c]	0	--	--	na	1.4E+03	--	--	na	3.9E+04	--	--	na	1.4E+02	--	--	na	3.9E+03	--	--	na	3.9E+03
Butylbenzylphthalate	0	--	--	na	1.9E+03	--	--	na	1.8E+04	--	--	na	1.9E+02	--	--	na	1.8E+03	--	--	na	1.8E+03
Cadmium	0	7.8E+00	1.8E+00	na	--	4.7E+01	1.1E+01	na	--	1.9E+00	4.5E-01	na	--	1.2E+01	2.8E+00	na	--	1.2E+01	2.8E+00	na	--
Carbon Tetrachloride [c]	0	--	--	na	1.6E+01	--	--	na	4.4E+02	--	--	na	1.6E+00	--	--	na	4.4E+01	--	--	na	4.4E+01
Chlordane [c]	0	2.4E+00	4.3E-03	na	8.1E-03	1.5E+01	2.7E-02	na	2.2E-01	6.0E-01	1.1E-03	na	8.1E-04	3.6E+00	6.7E-03	na	2.2E-02	3.6E+00	6.7E-03	na	2.2E-02
Chloride	0	8.6E+05	2.3E+05	na	--	5.2E+06	1.4E+06	na	--	2.2E+05	5.8E+04	na	--	1.3E+06	3.6E+05	na	--	1.3E+06	3.6E+05	na	--
TRC	0	1.9E+01	1.1E+01	na	--	1.1E+02	6.9E+01	na	--	4.8E+00	2.8E+00	na	--	2.9E+01	1.7E+01	na	--	2.9E+01	1.7E+01	na	--
Chlorobenzene	0	--	--	na	1.6E+03	--	--	na	1.5E+04	--	--	na	1.6E+02	--	--	na	1.5E+03	--	--	na	1.5E+03

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Chlorodibromomethane[C]	0	--	--	na	1.3E+02	--	--	na	3.6E+03	--	--	na	1.3E+01	--	--	na	3.6E+02	--	--	na	3.6E+02
Chloroform	0	--	--	na	1.1E+04	--	--	na	1.0E+05	--	--	na	1.1E+03	--	--	na	1.0E+04	--	--	na	1.0E+04
2-Chloronaphthalene	0	--	--	na	1.6E+03	--	--	na	1.5E+04	--	--	na	1.6E+02	--	--	na	1.5E+03	--	--	na	1.5E+03
2-Chlorophenol	0	--	--	na	1.5E+02	--	--	na	1.4E+03	--	--	na	1.5E+01	--	--	na	1.4E+02	--	--	na	1.4E+02
Chlorpyrifos	0	8.3E-02	4.1E-02	na	--	5.0E-01	2.6E-01	na	--	2.1E-02	1.0E-02	na	--	1.3E-01	6.4E-02	na	--	1.3E-01	6.4E-02	na	--
Chromium III	0	9.4E+02	1.2E+02	na	--	5.7E+03	7.6E+02	na	--	2.3E+02	3.0E+01	na	--	1.4E+03	1.9E+02	na	--	1.4E+03	1.9E+02	na	--
Chromium VI	0	1.6E+01	1.1E+01	na	--	9.7E+01	6.9E+01	na	--	4.0E+00	2.8E+00	na	--	2.4E+01	1.7E+01	na	--	2.4E+01	1.7E+01	na	--
Chromium, Total	0	--	--	1.0E+02	--	--	--	na	--	--	--	1.0E+01	--	--	--	9.5E+01	--	--	--	na	--
Chrysene[C]	0	--	--	na	1.8E-02	--	--	na	5.0E-01	--	--	na	1.8E-03	--	--	na	5.0E-02	--	--	na	5.0E-02
Copper	0	2.4E+01	1.5E+01	na	--	1.4E+02	9.4E+01	na	--	5.9E+00	3.7E+00	na	--	3.6E+01	2.3E+01	na	--	3.6E+01	2.3E+01	na	--
Cyanide, Free	0	2.2E+01	5.2E+00	na	1.6E+04	1.3E+02	3.3E+01	na	1.5E+05	5.5E+00	1.3E+00	na	1.6E+03	3.3E+01	8.1E+00	na	1.5E+04	3.3E+01	8.1E+00	na	1.5E+04
DDD[C]	0	--	--	na	3.1E-03	--	--	na	8.5E-02	--	--	na	3.1E-04	--	--	na	8.5E-03	--	--	na	8.5E-03
DDE[C]	0	--	--	na	2.2E-03	--	--	na	6.1E-02	--	--	na	2.2E-04	--	--	na	6.1E-03	--	--	na	6.1E-03
DDT[C]	0	1.1E+00	1.0E-03	na	2.2E-03	6.6E+00	6.3E-03	na	6.1E-02	2.8E-01	2.5E-04	na	2.2E-04	1.7E+00	1.6E-03	na	6.1E-03	1.7E+00	1.6E-03	na	6.1E-03
Demeton	0	--	1.0E-01	na	--	--	6.3E-01	na	--	--	2.5E-02	na	--	--	1.6E-01	na	--	--	1.6E-01	na	--
Diazinon	0	1.7E-01	1.7E-01	na	--	1.0E+00	1.1E+00	na	--	4.3E-02	4.3E-02	na	--	2.6E-01	2.7E-01	na	--	2.6E-01	2.7E-01	na	--
Dibenz(a,h)anthracene[C]	0	--	--	na	1.8E-01	--	--	na	5.0E+00	--	--	na	1.8E-02	--	--	na	5.0E-01	--	--	na	5.0E-01
1,2-Dichlorobenzene	0	--	--	na	1.3E+03	--	--	na	1.2E+04	--	--	na	1.3E+02	--	--	na	1.2E+03	--	--	na	1.2E+03
1,3-Dichlorobenzene	0	--	--	na	9.6E+02	--	--	na	9.1E+03	--	--	na	9.6E+01	--	--	na	9.1E+02	--	--	na	9.1E+02
1,4-Dichlorobenzene	0	--	--	na	1.9E+02	--	--	na	1.8E+03	--	--	na	1.9E+01	--	--	na	1.8E+02	--	--	na	1.8E+02
3,3-Dichlorobenzidine[C]	0	--	--	na	2.8E-01	--	--	na	7.7E+00	--	--	na	2.8E-02	--	--	na	7.7E-01	--	--	na	7.7E-01
Dichlorobromomethane[C]	0	--	--	na	1.7E+02	--	--	na	4.7E+03	--	--	na	1.7E+01	--	--	na	4.7E+02	--	--	na	4.7E+02
1,2-Dichloroethane[C]	0	--	--	na	3.7E+02	--	--	na	1.0E+04	--	--	na	3.7E+01	--	--	na	1.0E+03	--	--	na	1.0E+03
1,1-Dichloroethylene	0	--	--	na	7.1E+03	--	--	na	6.7E+04	--	--	na	7.1E+02	--	--	na	6.7E+03	--	--	na	6.7E+03
1,2-trans-dichloroethylene	0	--	--	na	1.0E+04	--	--	na	9.5E+04	--	--	na	1.0E+03	--	--	na	9.5E+03	--	--	na	9.5E+03
2,4-Dichlorophenol	0	--	--	na	2.9E+02	--	--	na	2.7E+03	--	--	na	2.9E+01	--	--	na	2.7E+02	--	--	na	2.7E+02
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
1,2-Dichloropropane[C]	0	--	--	na	1.5E+02	--	--	na	4.1E+03	--	--	na	1.5E+01	--	--	na	4.1E+02	--	--	na	4.1E+02
1,3-Dichloropropene[C]	0	--	--	na	2.1E+02	--	--	na	5.8E+03	--	--	na	2.1E+01	--	--	na	5.8E+02	--	--	na	5.8E+02
Dieldrin[C]	0	2.4E-01	5.6E-02	na	5.4E-04	1.5E+00	3.5E-01	na	1.5E-02	6.0E-02	1.4E-02	na	5.4E-05	3.6E-01	8.8E-02	na	1.5E-03	3.6E-01	8.8E-02	na	1.5E-03
Diethyl Phthalate	0	--	--	na	4.4E+04	--	--	na	4.2E+05	--	--	na	4.4E+03	--	--	na	4.2E+04	--	--	na	4.2E+04
2,4-Dimethylphenol	0	--	--	na	8.5E+02	--	--	na	8.1E+03	--	--	na	8.5E+01	--	--	na	8.1E+02	--	--	na	8.1E+02
Dimethyl Phthalate	0	--	--	na	1.1E+06	--	--	na	1.0E+07	--	--	na	1.1E+05	--	--	na	1.0E+06	--	--	na	1.0E+06
Di-n-Butyl Phthalate	0	--	--	na	4.5E+03	--	--	na	4.3E+04	--	--	na	4.5E+02	--	--	na	4.3E+03	--	--	na	4.3E+03
2,4 Dinitrophenol	0	--	--	na	5.3E+03	--	--	na	5.0E+04	--	--	na	5.3E+02	--	--	na	5.0E+03	--	--	na	5.0E+03
2-Methyl-4,6-Dinitrophenol	0	--	--	na	2.8E+02	--	--	na	2.7E+03	--	--	na	2.8E+01	--	--	na	2.7E+02	--	--	na	2.7E+02
2,4-Dinitrotoluene[C]	0	--	--	na	3.4E+01	--	--	na	9.4E+02	--	--	na	3.4E+00	--	--	na	9.4E+01	--	--	na	9.4E+01
Dioxin 2,3,7,8-tetrachlorodibenzo-p-dioxin	0	--	--	na	5.1E-08	--	--	na	4.8E-07	--	--	na	5.1E-09	--	--	na	4.8E-08	--	--	na	4.8E-08
1,2-Diphenylhydrazine[C]	0	--	--	na	2.0E+00	--	--	na	5.5E+01	--	--	na	2.0E-01	--	--	na	5.5E+00	--	--	na	5.5E+00
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	1.3E+00	3.5E-01	na	8.4E+02	5.5E-02	1.4E-02	na	8.9E+00	3.3E-01	8.8E-02	na	8.4E+01	3.3E-01	8.8E-02	na	8.4E+01
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	1.3E+00	3.5E-01	na	8.4E+02	5.5E-02	1.4E-02	na	8.9E+00	3.3E-01	8.8E-02	na	8.4E+01	3.3E-01	8.8E-02	na	8.4E+01
Alpha + Beta Endosulfan	0	2.2E-01	5.6E-02	--	--	1.3E+00	3.5E-01	--	--	5.5E-02	1.4E-02	--	--	3.3E-01	8.8E-02	--	--	3.3E-01	8.8E-02	--	--
Endosulfan Sulfate	0	--	--	na	8.9E+01	--	--	na	8.4E+02	--	--	na	8.9E+00	--	--	na	8.4E+01	--	--	na	8.4E+01
Endrin	0	8.6E-02	3.6E-02	na	6.0E-02	5.2E-01	2.3E-01	na	5.7E-01	2.2E-02	9.0E-03	na	6.0E-03	1.3E-01	5.6E-02	na	5.7E-02	1.3E-01	5.6E-02	na	5.7E-02
Endrin Aldehyde	0	--	--	na	3.0E-01	--	--	na	2.8E+00	--	--	na	3.0E-02	--	--	na	2.8E-01	--	--	na	2.8E-01

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Ethylbenzene	0	--	--	na	2.1E+03	--	--	na	2.0E+04	--	--	na	2.1E+02	--	--	na	2.0E+03	--	--	na	**2.0E+03**
Fluoranthene	0	--	--	na	1.4E+02	--	--	na	1.3E+03	--	--	na	1.4E+01	--	--	na	1.3E+02	--	--	na	**1.3E+02**
Fluorene	0	--	--	na	5.3E+03	--	--	na	5.0E+04	--	--	na	5.3E+02	--	--	na	5.0E+03	--	--	na	**5.0E+03**
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	**--**
Guthion	0	--	1.0E-02	na	--	--	6.3E-02	na	--	--	2.5E-03	na	--	--	1.6E-02	na	--	--	**1.6E-02**	na	**--**
Heptachlor [c]	0	5.2E-01	3.8E-03	na	7.9E-04	3.1E+00	2.4E-02	na	2.2E-02	1.3E-01	9.5E-04	na	7.9E-05	7.9E-01	5.9E-03	na	2.2E-03	**7.9E-01**	**5.9E-03**	na	**2.2E-03**
Heptachlor Epoxide[c]	0	5.2E-01	3.8E-03	na	3.9E-04	3.1E+00	2.4E-02	na	1.1E-02	1.3E-01	9.5E-04	na	3.9E-05	7.9E-01	5.9E-03	na	1.1E-03	**7.9E-01**	**5.9E-03**	na	**1.1E-03**
Hexachlorobenzene[c]	0	--	--	na	2.9E-03	--	--	na	8.0E-02	--	--	na	2.9E-04	--	--	na	8.0E-03	--	--	na	**8.0E-03**
Hexachlorobutadiene[c]	0	--	--	na	1.8E+02	--	--	na	5.0E+03	--	--	na	1.8E+01	--	--	na	5.0E+02	--	--	na	**5.0E+02**
Hexachlorocyclohexane Alpha-BHC[c]	0	--	--	na	4.9E-02	--	--	na	1.3E+00	--	--	na	4.9E-03	--	--	na	1.3E-01	--	--	na	**1.3E-01**
Hexachlorocyclohexane Beta-BHC[c]	0	--	--	na	1.7E-01	--	--	na	4.7E+00	--	--	na	1.7E-02	--	--	na	4.7E-01	--	--	na	**4.7E-01**
Hexachlorocyclohexane Gamma-BHC[c] (Lindane)	0	9.5E-01	na	na	1.8E+00	5.7E+00	--	na	5.0E+01	2.4E-01	--	na	1.8E-01	1.4E+00	--	na	5.0E+00	**1.4E+00**	--	na	**5.0E+00**
Hexachlorocyclopentadiene	0	--	--	na	1.1E+03	--	--	na	1.0E+04	--	--	na	1.1E+02	--	--	na	1.0E+03	--	--	na	**1.0E+03**
Hexachloroethane[c]	0	--	--	na	3.3E+01	--	--	na	9.1E+02	--	--	na	3.3E+00	--	--	na	9.1E+01	--	--	na	**9.1E+01**
Hydrogen Sulfide	0	--	2.0E+00	na	--	--	1.3E+01	na	--	--	5.0E-01	na	--	--	3.1E+00	na	--	--	**3.1E+00**	na	**--**
Indeno (1,2,3-cd) pyrene [c]	0	--	--	na	1.8E-01	--	--	na	5.0E+00	--	--	na	1.8E-02	--	--	na	5.0E-01	--	--	na	**5.0E-01**
Iron	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	**--**
Isophorone[c]	0	--	--	na	9.6E+03	--	--	na	2.6E+05	--	--	na	9.6E+02	--	--	na	2.6E+04	--	--	na	**2.6E+04**
Kepone	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	--	**0.0E+00**	na	**--**
Lead	0	2.6E+02	2.9E+01	na	--	1.6E+03	1.8E+02	na	--	6.4E+01	7.2E+00	na	--	3.9E+02	4.5E+01	na	--	**3.9E+02**	**4.5E+01**	na	**--**
Malathion	0	--	1.0E-01	na	--	--	6.3E-01	na	--	--	2.5E-02	na	--	--	1.6E-01	na	--	--	**1.6E-01**	na	**--**
Manganese	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	**--**
Mercury	0	1.4E+00	7.7E-01	--	--	8.5E+00	4.8E+00	--	--	3.5E-01	1.9E-01	--	--	2.1E+00	1.2E+00	--	--	**2.1E+00**	**1.2E+00**	--	**--**
Methyl Bromide	0	--	--	na	1.5E+03	--	--	na	1.4E+04	--	--	na	1.5E+02	--	--	na	1.4E+03	--	--	na	**1.4E+03**
Methylene Chloride [c]	0	--	--	na	5.9E+03	--	--	na	1.6E+05	--	--	na	5.9E+02	--	--	na	1.6E+04	--	--	na	**1.6E+04**
Methoxychlor	0	--	3.0E-02	na	--	--	1.9E-01	na	--	--	7.5E-03	na	--	--	4.7E-02	na	--	--	**4.7E-02**	na	**--**
Mirex	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	--	**0.0E+00**	na	**--**
Nickel	0	3.0E+02	3.4E+01	na	4.6E+03	1.8E+03	2.1E+02	na	4.4E+04	7.6E+01	8.4E+00	na	4.6E+02	4.6E+02	5.3E+01	na	4.4E+03	**4.6E+02**	**5.3E+01**	na	**4.4E+03**
Nitrate (as N)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	**--**
Nitrobenzene	0	--	--	na	6.9E+02	--	--	na	6.5E+03	--	--	na	6.9E+01	--	--	na	6.5E+02	--	--	na	**6.5E+02**
N-Nitrosodimethylamine[c]	0	--	--	na	3.0E+01	--	--	na	8.3E+02	--	--	na	3.0E+00	--	--	na	8.3E+01	--	--	na	**8.3E+01**
N-Nitrosodiphenylamine[c]	0	--	--	na	6.0E+01	--	--	na	1.7E+03	--	--	na	6.0E+00	--	--	na	1.7E+02	--	--	na	**1.7E+02**
N-Nitrosodi-n-propylamine[c]	0	--	--	na	5.1E+00	--	--	na	1.4E+02	--	--	na	5.1E-01	--	--	na	1.4E+01	--	--	na	**1.4E+01**
Nonylphenol	0	2.8E+01	6.6E+00	--	--	1.7E+02	4.1E+01	na	--	7.0E+00	1.7E+00	--	--	4.2E+01	1.0E+01	--	--	**4.2E+01**	**1.0E+01**	na	**--**
Parathion	0	6.5E-02	1.3E-02	na	--	3.9E-01	8.1E-02	na	--	1.6E-02	3.3E-03	na	--	9.8E-02	2.0E-02	na	--	**9.8E-02**	**2.0E-02**	na	**--**
PCB Total[c]	0	--	1.4E-02	na	6.4E-04	--	8.8E-02	na	1.8E-02	--	3.5E-03	na	6.4E-05	--	2.2E-02	na	1.8E-03	--	**2.2E-02**	na	**1.8E-03**
Pentachlorophenol [c]	0	1.6E+01	1.2E+01	na	3.0E+01	9.5E+01	7.5E+01	na	8.3E+02	3.9E+00	3.0E+00	na	3.0E+00	2.4E+01	1.9E+01	na	8.3E+01	**2.4E+01**	**1.9E+01**	na	**8.3E+01**
Phenol	0	--	--	na	8.6E+05	--	--	na	8.1E+06	--	--	na	8.6E+04	--	--	na	8.1E+05	--	--	na	**8.1E+05**
Pyrene	0	--	--	na	4.0E+03	--	--	na	3.8E+04	--	--	na	4.0E+02	--	--	na	3.8E+03	--	--	na	**3.8E+03**
Radionuclides	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	**--**
Gross Alpha Activity (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	**--**
Beta and Photon Activity (mrem/yr)	0	--	--	na	4.0E+00	--	--	na	3.8E+01	--	--	na	4.0E-01	--	--	na	3.8E+00	--	--	na	**3.8E+00**
Radium 226 + 228 (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	**--**
Uranium (ug/l)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	**--**

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Selenium, Total Recoverable	0	2.0E+01	5.0E+00	na	4.2E+03	1.2E+02	3.1E+01	na	4.0E+04	5.0E+00	1.3E+00	na	4.2E+02	3.0E+01	7.8E+00	na	4.0E+03	**3.0E+01**	**7.8E+00**	**na**	**4.0E+03**
Silver	0	9.8E+00	--	na	--	5.9E+01	--	na	--	2.4E+00	--	na	--	1.5E+01	--	na	--	**1.5E+01**	**--**	**na**	**--**
Sulfate	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	**--**	**--**	**na**	**--**
1,1,2,2-Tetrachloroethane[C]	0	--	--	na	4.0E+01	--	--	na	1.1E+03	--	--	na	4.0E+00	--	--	na	1.1E+02	**--**	**--**	**na**	**1.1E+02**
Tetrachloroethylene[C]	0	--	--	na	3.3E+01	--	--	na	9.1E+02	--	--	na	3.3E+00	--	--	na	9.1E+01	**--**	**--**	**na**	**9.1E+01**
Thallium	0	--	--	na	4.7E-01	--	--	na	4.5E+00	--	--	na	4.7E-02	--	--	na	4.5E-01	**--**	**--**	**na**	**4.5E-01**
Toluene	0	--	--	na	6.0E+03	--	--	na	5.7E+04	--	--	na	6.0E+02	--	--	na	5.7E+03	**--**	**--**	**na**	**5.7E+03**
Total dissolved solids	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	**--**	**--**	**na**	**--**
Toxaphene [C]	0	7.3E-01	2.0E-04	na	2.8E-03	4.4E+00	1.3E-03	na	7.7E-02	1.8E-01	5.0E-05	na	2.8E-04	1.1E+00	3.1E-04	na	7.7E-03	**1.1E+00**	**3.1E-04**	**na**	**7.7E-03**
Tributyltin	0	4.6E-01	7.2E-02	na	--	2.8E+00	4.5E-01	na	--	1.2E-01	1.8E-02	na	--	6.9E-01	1.1E-01	na	--	**6.9E-01**	**1.1E-01**	**na**	**--**
1,2,4-Trichlorobenzene	0	--	--	na	7.0E+01	--	--	na	6.6E+02	--	--	na	7.0E+00	--	--	na	6.6E+01	**--**	**--**	**na**	**6.6E+01**
1,1,2-Trichloroethane[C]	0	--	--	na	1.6E+02	--	--	na	4.4E+03	--	--	na	1.6E+01	--	--	na	4.4E+02	**--**	**--**	**na**	**4.4E+02**
Trichloroethylene [C]	0	--	--	na	3.0E+02	--	--	na	8.3E+03	--	--	na	3.0E+01	--	--	na	8.3E+02	**--**	**--**	**na**	**8.3E+02**
2,4,6-Trichlorophenol [C]	0	--	--	na	2.4E+01	--	--	na	6.6E+02	--	--	na	2.4E+00	--	--	na	6.6E+01	**--**	**--**	**na**	**6.6E+01**
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	**--**	**--**	**na**	**--**
Vinyl Chloride[C]	0	--	--	na	2.4E+01	--	--	na	6.6E+02	--	--	na	2.4E+00	--	--	na	6.6E+01	**--**	**--**	**na**	**6.6E+01**
Zinc	0	2.0E+02	2.0E+02	na	2.6E+04	1.2E+03	1.2E+03	na	2.5E+05	4.9E+01	4.9E+01	na	2.6E+03	3.0E+02	3.1E+02	na	2.5E+04	**3.0E+02**	**3.1E+02**	**na**	**2.5E+04**

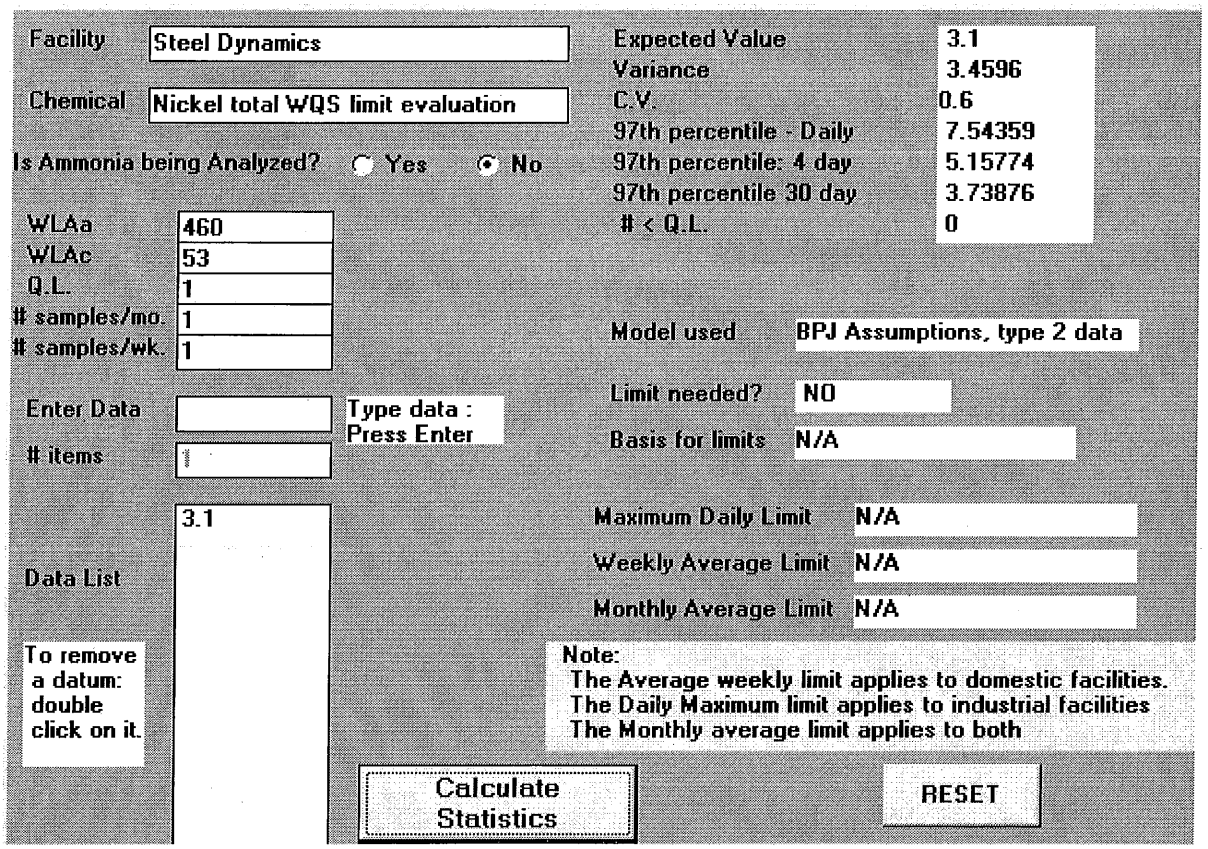
Notes:

1. All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
2. Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
3. Metals measured as Dissolved, unless specified otherwise
4. "C" indicates a carcinogenic parameter
5. Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information. Antidegradation WLAs are based upon a complete mix.
6. Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
   = (0.1(WQC - background conc.) + background conc.) for human health
7. WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens and Harmonic Mean for Carcinogens. To apply mixing ratios from a model set the stream flow equal to (mixing ratio - 1), effluent flow equal to 1 and 100% mix.

Metal	Target Value (SSTV)
Antimony	6.1E+02
Arsenic	1.4E+02
Barium	na
Cadmium	1.7E+00
Chromium III	1.1E+02
Chromium VI	9.7E+00
Copper	1.4E+01
Iron	na
Lead	2.7E+01
Manganese	na
Mercury	7.2E-01
Nickel	3.2E+01
Selenium	4.7E+00
Silver	5.9E+00
Zinc	1.2E+02

Note: do not use QL's lower than the minimum QL's provided in agency guidance

STATS.exe Evaluation of single Total Nickel Value



VPDES Permit VA0001589
Steel Dynamics, Roanoke Bar Division
Reissuance 2011

ATTACHMENT D

1. Storm water DMR effluent data submitted during the 2005 permit term for outfalls 001, 002 and 003

2. Storm water application testing data for outfalls 001, 002 and 003

3. WET data summary memo for outfall 001

VPDES Permit VA0001589
Steel Dynamics, Roanoke Bar Division
Reissuance 2011

ATTACHMENT D

DMR Data Summary **VA0001589**
Steel Dynamics Roanoke Bar Division

Outfall No:001

Due Date	10-Jul-2006	10-Jan-2008	10-Jan-2009	10-Jan-2010	Screening
Parameter Description					Criteria
Flow, Precipitation event (estimate)	0.01	0.015	0.16	1.32	na
Total Suspended Solids (mg/L)	113	126	90	49.5	100
Aluminum, total recoverable	1360	1980	1400	740	750
TUa - Acute 48-hr static C. Dubia	7.5	19.9	3.4	4.9	1

Outfall No:002

Due Date	10-Jul-2006	10-Jan-2008	10-Jan-2009	10-Jan-2010	Screening
Parameter Description					Criteria
Flow, Precipitation event (estimate)	0.002	0.002	0.1	0.85	na
pH (s.u.)	9.82	8.31	8.73	8.46	6.0 - 9.0
Aluminum, total recoverable (ug/L)	516	546	823	920	750
Zinc, total recoverable (ug/L)	546	186	417	330	120
Copper, dissolved (ug/L as CU)	42	22	8	7.9	60

Outfall No:003

Due Date	10-Jul-2006	10-Jan-2008	10-Jan-2009	10-Jan-2010	Screening
Parameter Description					Criteria
Flow, Precipitation event (estimate)	0.002	0.0009	0.04	0.31	na
Aluminum, total recoverable (ug/L)	290	752	2320	780	750

EPA Application 2F Data Summary **VA0001589**
Steel Dynamics Roanoke Bar Division

Storm 24 April 2010, 0.43 inches
225 minutes duration (3.75 hours)
> 72 hours since last measurable event

	Outfall number						
	001	**002**	**003**	**006**	**007**	**Screening**	
Parameter Description (mg/l unless noted)						**Criteria**	
Flow, Precipitation event (estimate) (gal)	150,848	151,840	35,727	38,704	320,224	na	
Oil & Grease	nd	nd	nd	nd	nd	15	
Biological Oxygen Demand, 5-day (BOD5)	2	2	5	nd	12	30	
Chemical Oxygen Demand, 5-day (COD)	35	32	73	41	21	120	
Total Suspended Solids (TSS)	53	16	14	27	115	100	
Total Organic Nitrogen	<1.0	2.3	1.78	nd	nd	2.2	criteria is for total nitrogen
Total Phosphorus	0.24	0.3	0.27	0.32	0.47	2	
pH (standard units)	8.75	7.64	8.44	9.29	9.86	6.0 - 9.0	
Aluminum, total recoverable (ug/l)	740	920	249			750	
Copper, dissolved (ug/L)	21.5	7.9	10.9	10.9	nd	60	criteria is for dissolved values
Copper, total recoverable (ug/L)			19.2	10.3	24.6	60	criteria is for dissolved values
Zinc, total recoverable (ug/L)	637	330	115	50.9	80.9	120	
Chrome VI, dissolved	nd	nd	nd	nd	nd		

nd = not detected at the quanitifiction level

No discharge from outfall 008 due to stormwater detention basin

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY
Blue Ridge Regional Office - Roanoke
Water Division

3019 Peters Creek Road **Roanoke, VA 24019**

Subject: WET Testing; Acute - *C. dubia* Annual; Outfall 001
Steel Dynamics Roanoke Bar Division dba Roanoke Electric Steel, Roanoke
VPDES permit VA0001589

To: Fact Sheet 2010 VPDES Permit Reissuance

From: Susan K. Edwards, Environmental Engineer Senior

Date: April 2010

Discussion:

Acute WET testing is performed on storm water samples from outfall 001 on an annual basis to assist in monitoring the effectiveness of the facility's Storm Water Pollution Prevention Plan (SWPPP). The 2005 VPDES Permit reissuance reduced bioassay testing to only C. dubia (fathead minnows) as the previous testing showed no toxicity in the P. promelas (water fleas).

The results of the annual acute WET tests are shown on the summary table below. Grab samples of stormwater discharges from outfall 001 were collected for toxicity testing. Each data package and report was audited. Each submittal was determined to be valid based on the appropriate review checklist. Effluent Stormwater Discharge Date Record was included in each report. The form provides documentation that the stormwater events sampled meet the requirements of the VPDES permit special condition.

The test indicates that the effluent samples are acutely toxic for *C. dubia*. The LC_{50} for C. dubia are consistently very poor. The permittee, Steel Dynamics, has worked to improve house keeping measures as part of the stormwater Pollution Prevention Plan's Best Management Practices. They believe that the new air pollution control baghouse will greatly improve the stormwater quality by reducing the particulate deposition of materials in this area from the plant's arc furnaces.

The new air pollution baghouse is located in new stormwater outfall areas of the property with new stormwater quality management measures.

Recommendations:

The cumulative results of acute toxicity tests indicate that the stormwater from outfall 001 is acutely toxic to *Ceriodaphnia*. As stated during the permit term it is recommended that further consideration be given to installing additional "Advanced Best Management Practices" (as worded in the SWPPPP) on this outfall. Determine the cause and mitigate the high pH readings in the stormwater. Evaluate the need to install structural measures to improve stormwater quality from this.

Continued sampling, testing and reporting of WET in accordance with the Toxicity Management Program. The next acute 001 bioassay should be before Dec. 31, 2010 with results submittal by Jan. 10, 2011.

Acute Toxicity Test Results - outfall 001

Test Date	Test Organism	48-hour LC_{50}	TUa	% Survival in 100% Effluent
06/06	C. dubia	13.4	7.5	0
07/07	C. dubia	5.03	19.9	0
05/08	C. dubia	29.4	3.4	20
12/09	C. dubia	20.4	4.9	0

VPDES Permit VA0001589
Steel Dynamics, Roanoke Bar Division
Reissuance 2011

ATTACHMENT E

1. NPDES Permit Rating Worksheet

VPDES Permit VA0001589
Steel Dynamics, Roanoke Bar Division
Reissuance 2011

ATTACHMENT E

NPDES PERMIT RATING WORK SHEET

☐ Regular Addition
☐ DiscretionaryAddition
☐ Score change, but no status change
☐ Deletion

NPDES NO. VA0001589

Facility Name: Steel Dynamics Roanoke Bar Division (a.k.a. Roanoke Electric Steel)

City: Roanoke, Virginia

Receiving Water: Peters Creek, Roanoke River watershed

Reach Number: _____

Is this facility a steam electric power plant (SIC=4911) with one or more of the following characteristics?

1. Power output 500 MW or greater (not using a cooling pond/lake)
2. A nuclear power plant
3. Cooling water discharge greater than 25% of the receiving stream's 7Q10 flow rate

☐ YES; score is 600 (stop here) ☑ NO (continue)

Is this permit for a municipal separate storm sewer serving a population greater than 100,000?

☐ YES; score is 700 (stop here)

☑ NO (continue)

FACTOR 1: Toxic Pollutant Potential

PCS SIC Code: 3312 Primary SIC Code: 3312 (Steel Making, Continuous Casting & Hot Forming 40 CFR 420, Subparts (D no discharge), F & G)

Other SIC Codes: _____

Industrial Subcategory Code: 007 & 003 (Code 000 if no subcategory)

Determine the Toxicity potential from Appendix A. Be sure to use the TOTAL toxicity potential column and check one)

Toxicity Group	Code	Points	Toxicity Group	Code	Points	Toxicity Group	Code	Points
☐ No process waste streams	0	0	☑ 3.	3	15	☑ 7.	7	35
☐ 1.	1	5	☐ 4.	4	20	☐ 8.	8	40
☐ 2.	2	10	☐ 5.	5	25	☐ 9.	9	45
			☐ 6.	6	30	☐ 10.	10	50

Code Number Checked: 3 & 7

Total Points Factor 1: 35

FACTOR 2: Flow/Stream Flow Volume (*Complete either Section A or Section B; check only one)*

Section A ☐ Wastewater Flow Only Considered

Wastewater Type (See Instructions)		Code	Points
Type I: Flow < 5 MGD	☐	11	0
Flow 5 to 10 MGD	☐	12	10
Flow > 10 to 50 MGD	☐	13	20
Flow > 50 MGD	☐	14	30
Type II: Flow < 1 MGD	☐	21	10
Flow 1 to 5 MGD	☐	22	20
Flow > 5 to 10 MGD	☐	23	30
Flow > 10 MGD	☐	24	50
Type III: Flow < 1 MGD	☐	31	0
Flow 1 to 5 MGD	☐	32	10
Flow > 5 to 10 MGD	☐	33	20
Flow > 10 MGD	☐	34	30

Section B ☐ Wastewater and Stream Flow Considered

Wastewater Type (See Instructions)	Percent of instream Wastewater Concentration at Receiving Stream Low Flow		Code	Points
Type I/III:	< 10 %	☐	41	0
	10 % to < 50 %	☐	42	10
	> 50 %	☐	43	20
Type II:	< 10 %	☐	51	0
	10 % to <50 %	☑	52	20
	> 50 %	☐	53	30

Code Checked from Section A or B: 52

Total Points Factor 2: 20

NPDES PERMIT RATING WORK SHEET

FACTOR 3: Conventional Pollutants NPDES NO: VA0001589
(only when limited by the permit)

A. Oxygen Demanding Pollutant: (check one) ☐ BOD ☐ COD ☐ Other: NA

			Code	*Points*
Permit Limits: (check one)	☐	< 100 lbs/day	1	0
	☐	100 to 1000 lbs/day	2	5
	☐	> 1000 to 3000 lbs/day	3	15
	☐	> 3000 lbs/day	4	20

Code Checked: _____

Points Scored: 0

B. Total Suspended Solids (TSS): NA

			Code	*Points*
Permit Limits: (check one)	☐	< 100 lbs/day	1	0
	☐	100 to 1000 lbs/day	2	5
	☑	> 1000 to 5000 lbs/day	3	15
	☐	> 5000 lbs/day	4	20

Code Checked: 3

Points Scored: 15

C. Nitrogen Pollutant: (check one) ☐ Ammonia ☐ Other: NA

		Nitrogen Equivalent	*Code*	*Points*
Permit Limits: (check one)	☐	< 300 lbs/day	1	0
	☐	300 to 1000 lbs/day	2	5
	☐	> 1000 to 3000 lbs/day	3	15
	☐	> 3000 lbs/day	4	20

Code Checked: _____

Points Scored: 0

Total Points Factor 3: 15

FACTOR 4: Public Health Impact

Is there a public drinking water supply located within 50 miles downstream of the effluent discharge (this includes any body of water to which the receiving water is a tributary)? A public drinking water supply may include infiltration galleries, or other methods of conveyance that ultimately get water from the above referenced supply.

☐ YES (If yes, check toxicity potential number below)

☑ NO (If no, go to Factor 5)

Determine the *human health* toxicity potential from Appendix A. Use the same SIC code and subcategory reference as in Factor 1. (Be sure to use the human health toxicity group column ? check one below)

Toxicity Group	Code	Points	Toxicity Group	Code	Points	Toxicity Group	Code	Points
☐ No process waste streams	0	0	☐ 3.	3	0	☐ 7.	7	15
☐ 1.	1	0	☐ 4.	4	0	☐ 8.	8	20
☐ 2.	2	0	☐ 5.	5	5	☐ 9.	9	25
			☐ 6.	6	10	☐ 10.	10	30

Code Number Checked: _____

Total Points Factor 4: 0

NPDES PERMIT RATING WORK SHEET

FACTOR 5: Water Quality Factors NPDES NO: VA0001589

A. *Is (or will) one or more of the effluent discharge limits based on water quality factors of the receiving stream (rather than technology-based federal effluent guidelines, or technology-based state effluent guidelines), or has a wasteload allocation been assigned to the discharge:*

		Code	Points
☑	Yes	1	10
☐	No	2	0

B. *Is the receiving water in compliance with applicable water quality standards for pollutants that are water quality limited in the permit?*

		Code	Points
☑	Yes	1	0
☐	No	2	5

C. *Does the effluent discharged from this facility exhibit the reasonable potential to violate water quality standards due to whole effluent toxicity?*

		Code	Points
☑	Yes	1	10
☐	No	2	0

Code Number Checked: A 1 B 1 C 1

Points Factor 5: A 10 + B 0 + C 10 = 20 TOTAL

FACTOR 6: Proximity to Near Coastal Waters

A. *Base Score: Enter flow code here (from Factor 2):* NA *Enter the multiplication factor that corresponds to the flow code:* -

Check appropriate facility HPRI Code (from PCS):

	HPRI#	*Code*	*HPRI Score*
☐	1	1	20
☐	2	2	0
☐	3	3	30
☐	4	4	0
☐	5	5	20

HPRI code checked: ___

Flow Code	*Multiplication Factor*
11, 31, or 41	0.00
12, 32, or 42	0.05
13, 33, or 43	0.10
14 or 34	0.15
21 or 51	0.10
22 or 52	0.30
23 or 53	0.60
24	1.00

Base Score: (HPRI Score) ____ X (Multiplication Factor) ____ = 0 (TOTAL POINTS)

B. *Additional Points* ☐ *NEP Program*
For a facility that has an HPRI code of 3, does the facility discharge to one of the estuaries enrolled in the National Estuary Protection (NEP) program (see instructions) or the Chesapeake Bay?

	Code	Points
☐ Yes	1	10
☐ No	2	0

C. *Additional Points* ☐ *Great Lakes Area of Concern*
For a facility that has an HPRI code of 5, does the facility discharge any of the pollutants of concern into one of the Great Lakes' 31 areas of concern (see Instructions)

	Code	Points
☐ Yes	1	10
☐ No	2	0

Code Number Checked: A__ B__ C__

Points Factor 6: A__ + B__ + C__ = 0 TOTAL

NPDES PERMIT RATING WORK SHEET

SCORE SUMMARY

NPDES NO: VA0001589

Factor	Description	Total Points
1	Toxic Pollutant Potential	35
2	Flows/Streamflow Volume	20
3	Conventional Pollutants	15
4	Public Health Impacts	0
5	Water Quality Factors	20
6	Proximity to Near Coastal Waters	0
	TOTAL (Factors 1 through 6)	**90**

S1. Is the total score equal to or greater than 80? ☑ Yes (Facility is a major) ☐ No

S2. If the answer to the above questions is no, would you like this facility to be discretionary major?

☐ No

☐ Yes (Add 500 points to the above score and provide reason below:

Reason:_____

NEW SCORE: **90**

OLD SCORE: **90**

Susan K. Edwards
Permit Reviewer's Name

(540) 562-6764
Phone Number

April 22, 2010
Date